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THE RELATION OF RESPIRATORY INFECTIONS TO PUERPERAL INFECTION

JOHN T. WILLIAMS, M.D.

BOSTON

Eight thousand women die annually in the United States from puerperal infection.[1] This has been said so often that it has become almost a platitude.

The fact remains, however, that in spite of universal improvement in aseptic obstetric technic and in spite of the introduction of many new and powerful antiseptics, puerperal sepsis remains a major obstetric problem.

The attempt to sterilize the vagina by instillations of mercurochrome-220 soluble during labor, as introduced by Mayes [2] of Brooklyn, has apparently produced a slight decrease in the incidence of infection in clinics in which it has been used, but it has not solved the problem.

At the Boston City Hospital we have compared the results of different methods of obstetric antisepsis. In each of our five delivery rooms a different antiseptic was used over a considerable period. Mercurochrome, corrosive mercuric chloride, iodine, trinitrophenol and hexylresorcinol were the chemicals used. A comparison of the average range in temperature of patients delivered under each regimen showed no appreciable difference. This work is shortly to be published by one of my colleagues.

The commendable effort to develop a new and powerful antiseptic and to improve aseptic technic has caused surgeons and obstetricians alike to lose sight of, or to neglect, many other factors concerned in the production of infection. The purpose of this paper is, first, to emphasize the many-sidedness of the problem of puerperal infection, and, second, to follow for a brief distance one of the trails leading toward the great objective, the elimination of puerperal infection.

Certain important factors other than breaks of aseptic technic have suggested themselves to me as predisposing to infection during labor and the puerperium.

1. Premature rupture of the membranes without doubt facilitates the entrance of organisms into the uterus. Therefore when the membranes have ruptured precautions should be taken concerning asepsis of the perineum, and the patient should be given castor oil and quinine to hasten delivery.

2. The introduction of the bag and other necessary measures for inducing labor are followed by a higher incidence of infection.

3. Toxemia lowers the patient's resistance to infection.

4. Placenta praevia, because the low placental site offers easy access to vaginal bacteria; also, because the loss of blood lowers the patient's resistance, is especially prone to be followed by sepsis.

5. Wounds resulting from operative delivery, including both the wounds of cesarean section and those resulting from cervical and vaginal lacerations, afford excellent portals of entry for infection. It is a widely believed fallacy that nearly all infections enter through the endometrium.

6. The source of infection may be exposure to another patient with puerperal sepsis. It may be a member of the patient's family suffering from an acute respiratory infection, or she herself may carry the germs in her throat and convey them to the genital tract. Physicians and nurses may also, of course, carry infectious organisms in their throats.

The occurrence of epidemics of puerperal infection has long been noted. No epidemic, however, has been so carefully studied as that which occurred at the Sloane Hospital in 1927. I shall review briefly the report made by Watson [3] and the studies made by bacteriologists from the Surgical Research Laboratories of the College of Physicians and Surgeons.[4] During a period of four weeks early in 1927, in approximately 15 per cent of one hundred and sixty-three patients delivered, severe puerperal infection developed, and of those infected, 36 per cent died.

Extensive bacteriologic studies were made. Streptococcus haemolyticus was recovered from the lochia of all the infected patients except one. None of the infected patients examined yielded positive nose or throat cultures, however, but twenty of one hundred nurses and two of twenty-six doctors were found to carry hemolytic streptococci in their throats.

It has been said that puerperal infection is more common among patients delivered in hospitals than among those delivered at home. I have been unable to obtain accurate figures of the relative frequency of sepsis in hospitals and in homes, but we see a sufficient number of patients delivered at home who are sent to us at the Boston City Hospital with postpartum sepsis to know that puerperal infection is not rare in patients delivered at home.

The subject of this paper is a study of the incidence of puerperal infections in the Boston City Hospital obstetric and gynecologic service over a five-year period, from 1926 to 1930, inclusive, compared with the inci-

From the Gynecological and Obstetrical Department of the Boston City Hospital.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

1. Greenhill, J. P.: Effect of Intrapartum Care on the Mother, New York, American Child Health Association, 1929.

2. Mayes, H. W.: The Use of Mercurochrome in Obstetrics, Am. J. Obst. & Gynec. **10**: 61 (July) 1925.

3. Watson, B. P.: An Outbreak of Puerperal Sepsis in New York City, Am. J. Obst. & Gynec. **16**: 157 (Aug.) 1928.

4. Meleney, F. L.; Zau, Z. D.; Zaytzeff, H., and Harvey, H. D.: Am. J. Obst. & Gynec. **16**: 180 (Aug.) 1928.

dence of respiratory diseases in the city of Boston [5] during the same period, the hospital patients coming from the same geographic area as that covered by the board of health reports.

Walker [6] of the Harvard Surgical Teaching Service at the Boston City Hospital has made a similar study for surgical infections, and I shall reproduce his chart later. He found the greatest incidence in January, February and March, the peak being reached in March. He also found that the curve of hemolytic streptococcus infections followed closely, but at a lower level, the curve of all infections. Fifty per cent of the personnel in his operating room were found to be carriers.

As a result of his observations, he devised a face mask containing rubber; this made the patient impervious to exhalations from the nose and throat, at least directly into the wound.

Chart 1 is a reproduction of Walker's chart, showing wound infections in his service at the Boston City Hospital during 1928. Note that the peak of infection occurs during March.

The incidence of respiratory infections reported to the Boston Board of Health over a five-year period, from 1926 to 1930, inclusive, is shown in chart 2. In Massachusetts, pneumonia, influenza and septic sore throat are reportable to the local board of health. The population of Boston proper (781,188, according to the census of 1930) is practically stationary, although the center of a population area of approximately 2,000,000. The patients admitted to the Boston City Hospital, with few exceptions, come from the city proper. The population covered by the figures of the Board of Health is therefore practically identical with that served by the hospital. It will be noted that the incidence of respiratory disease follows a fairly regular curve from

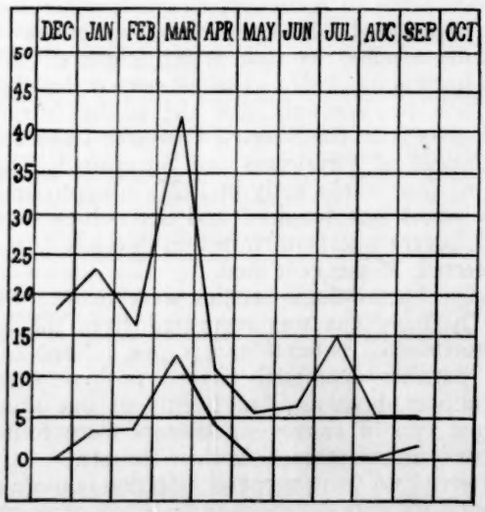

Chart 1.—Incidence of wound infections and of Streptococcus haemolyticus infections at the Boston City Hospital, 1928, service of Dr. Irving J. Walker. Upper line, wound infection; lower line, Streptococcus haemolyticus infections.

year to year, the peak being reached invariably in etiher January or March; the curve falls gradually through the spring, reaching the low level in August and September, with a gradual rise in the early fall and a more rapid rise in November and December.

As a criterion of infection during the puerperium in the Boston City Hospital as shown in chart 3 I have taken the occurrence of a temperature of 101 F. or over during the first five days, if accompanied by a subinvoluted or tender fundus, foul pads or other evidence of infection. The curve of puerperal sepsis reaches its peak in either March or April, more commonly in April, somewhat later than the peak of respiratory infection. The low months for puerperal infections are May and August. A somewhat surprising phenomenon is a rise in the incidence of puerperal sepsis in the early summer, June or July invariably showing a marked increase in the percentage of patients with high temperatures.

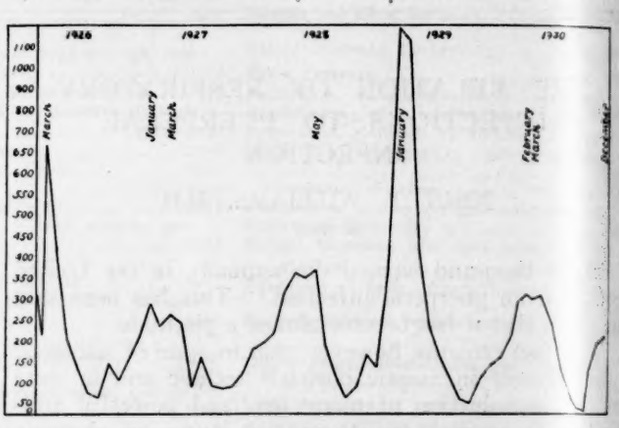

Chart 2.—The incidence of respiratory infections reported to the Boston Board of Health, from 1926 to 1930, inclusive.

The rise in the incidence of puerperal infection during March and April follows closely the usual epidemic of respiratory diseases occurring in the late winter and the early spring. The air, throats, hands and skin become carriers of the bacteria that cause both respiratory and puerperal infection, and an increase in respiratory infection is certain to be followed by a rise in puerperal infection. The early summer rise in puerperal temperatures is not so easily explained, but it seems to be a fairly constant phenomenon.

On April 1, 1927, the new Gynecological and Obstetrical Building was opened, and the service moved from antiquated and inadequate quarters to a modern and well equipped building. It is of interest that the first forty-three patients delivered in clean new quarters had absolutely afebrile convalescences. The forty-fourth patient delivered on the twenty-fifth day in the new building, was the first patient whose temperature rose to 101 F. during the puerperium.

I am glad to note also that the number of infections did not mount in proportion to the increase in the number of deliveries.

As a standard of severe sepsis in the cases of infection illustrated in chart 4, I have chosen the persistence of a temperature of 101 F. or over for one week or more, with definite signs of infection. Septic deaths are noted by arrows. Respiratory infections during the puerperium sufficient to cause a temperature of 101 F. or over are recorded by figures, showing the number of infections occurring in a given month. In spite of the large number of patients admitted who were suffering from colds and other infections of the upper respiratory tract, comparatively few had sufficient trouble to cause the temperature to rise to 101 F. or over during the puerperium.

There were eight deaths from puerperal infection; two of these occurred in patients delivered in March, and two in patients delivered in July. April, May, June and December showed one death each; August,

5. Bull., Health Dept., Boston: vols. 15 to 19, inclusive, 1926 to 1930.
6. Walker, Irving J.: How Can We Determine the Efficiency of the Surgical Mask? Surg., Gynec. & Obst. 48: 266, 1929.

September, October, November and February were without fatalities. Fifteen per cent of the infections followed cesarean section. Thirty per cent followed operative vaginal deliveries, and 55 per cent spontaneous deliveries. Therefore, although the proportion of spontaneous deliveries greatly exceeded that of operative deliveries, nearly one half of the cases of sepsis followed operative delivery.

CONCLUSIONS

1. Surgical asepsis alone has not succeeded in stamping out puerperal infection.

2. Other factors in the production of puerperal sepsis must be investigated. These fall into two groups: (*a*) those lowering the patient's resistance, such as excessive loss of blood and toxemia, and (*b*) those increasing the exposure to infection, such as respiratory diseases, vaginal manipulation and wounds (including both surgical incisions, as in cesarean section and episiotomy, and lacerations resulting from operative or nonoperative vaginal delivery).

3. It has been shown definitely that the curve of the incidence of puerperal infection follows the curve of the incidence of respiratory infection, but at a somewhat later date.

4. Every possible method should be adopted to guard the prospective mother from exposure to respiratory infections. This should include segregating her from crowds and, during the last month of pregnancy, from friends and members of the family with respiratory disease; culturing the throats of medical attendants and nurses at frequent intervals, and in enforcing the use of rubber face masks by attendants and nurses in the delivery room.

5. The peak of puerperal infection is reached in March or April, more commonly in April. There is also an unexplained rise in June or July.

6. August and May are the months in which the smallest number of cases of infection develop, but

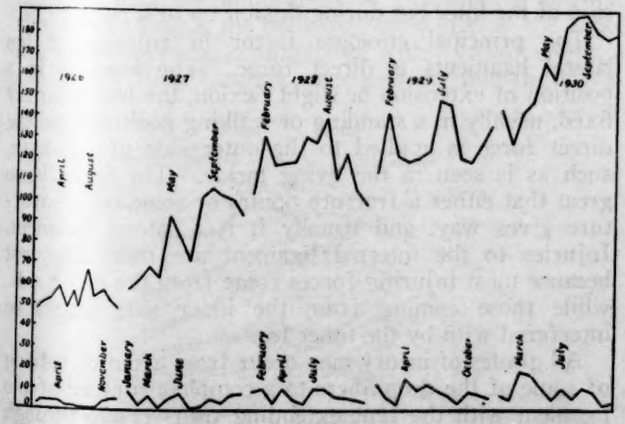

Chart 3.—Incidence of puerperal infection, Boston City Hospital, from 1926 to 1930, inclusive. Upper line, number of deliveries; lower line, incidence of infection.

August, September, October, November and February were without fatalities from infection.

7. From the standpoint of sepsis the period from midsummer to the beginning of winter is the safest time for women to bear children.

While absolute elimination of infection in childbirth in the immediate future is improbable, if the problem is considered and attacked in its broadest aspects, it is not impossible that the next generation will see a reduction in the incidence of puerperal sepsis as striking as that of typhoid fever in our own time.

ABSTRACT OF DISCUSSION

DR. PHILLIPS J. CARTER, New Orleans: There are about three important factors in puerperal sepsis in its relation to respiratory diseases that should always be borne in mind: The first factor that produces an alarming number of the puerperal cases is breaks in aseptic technic; the second, carriers of Streptococcus haemolyticus in the throat, which greatly menace the lying-in chamber. That has been remedied by routine throat examinations of all attendants in the lying-in chamber and the wearing of mouth masks, head gear and the proper gown. Third is the proper placement of the pad. That I shall take up last because it is the most important, I think, in the

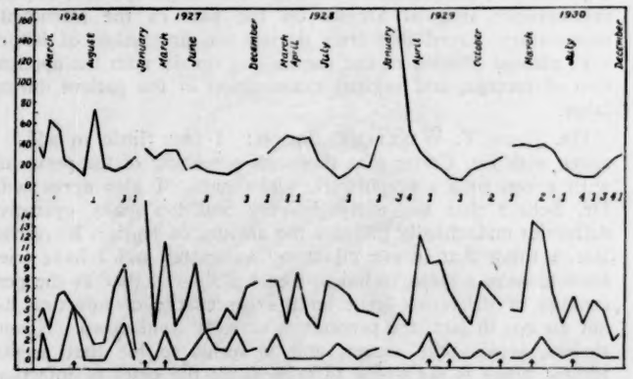

Chart 4.—The upper line shows the curve of respiratory infections per hundred thousand population, from 1926 to 1930, inclusive; the middle line, the total percentage of puerperal infections at Boston City Hospital, and the lower line, the percentage of severe puerperal infections. Months appearing at top indicate peaks of infection. Arrows indicate deaths from puerperal infection. Numbers indicate number of severe respiratory infections during puerperium in a given month.

production of puerperal infection in the so-called clean cases. Under the breaks in aseptic technic, I am afraid one is prone to accept the chemical action on the organisms rather than the mechanical cleansing in the preparations that are used today. I thoroughly agree with Dr. Williams that the technics recently applied have not produced any decrease in morbidity or mortality, but I wish to refer to the use particularly of green soap and water, with thorough scrubbing of the external genitalia and the thorough ironing out of the perineum with tincture of green soap and water. That process should be carried out in a specific manner. I still see the improper preparation of the external genitalia, on which the same mops that are used for the outside are introduced into the vagina at the same time that the cleansing is done. The cleansings should be done separately; however, they are not. It is desirable to eleminate as far as possible procedures that traumatize the tissues, such as routine episiotomies and direct hand pressure against the perineum. Laceration of the external genitalia is a foremost cause of morbidity and a forerunner of puerperal sepsis. The first twenty-four hours the vulva pad should be placed in close proximity to the whole vulva outlet, as during this time the blood flows through the vagina and acts as a washing-out process and carries with it the débris and bacteria that are located there. After the twenty-four hours there is a shrinkage or a less marked production of the flow and there is a tendency to backflow; the pad should now lie between the legs on the bed, so that there will be no backflow and there will be no stopping of the flow by the pressure of the vulva pad.

DR. F. J. SCHATZ, St. Cloud, Minn.: Speaking from my own experience, in which at least 65 per cent of the work is done in the home, during the past ten years I have had the opportunity to deliver more than 2,500 mothers, with but two maternal deaths. I have had five cases of infection in the home. In case 1, the same night after delivery the mother was up and about in a cold house taking care of other members of the family. The third day she had a chill. After the sixth day the temperature was normal and the patient recovered. In case 2, placenta praevia with separation and hemorrhage, the patient recovered. In case 3, of postpartum hemorrhage, the patient had a chill the third day; the temperature was normal after seventy-two hours. Patient 4 was not seen until the tenth

day after the discharge, when there was an elevation of temperature and all signs pointed to sepsis; blood and uterine cultures were negative. In spite of all forms of treatment (blood transfusion, 1 per cent solution of mercurochrome intravenously, whisky, quinine and other stimulants) the patient died. In case 5 there was spontaneous delivery after the patient had been in labor one hour. A son had scarlet fever unknown to me, and on my return visit he was in the room with the mother. The following day she had a sore throat with a chill; peritonitis developed after forty-eight hours; the patient died on the tenth day. My preparation of the patient consists of scrubbing with 1 per cent compound solution of cresol and soap, which is used in the home before rectal or vaginal examinations are made. I believe that the greatest causative factor in puerperal infections is improper surgical asepsis on the part of the attendant; unnecessary forced deliveries during the first stage of labor; i. e., manual dilation of the vagina and cervix with the application of forceps, and vaginal examination of the patient during labor.

DR. JOHN T. WILLIAMS, Boston: I have little to add. I agree with Dr. Carter that thorough scrubbing of the perineum with green soap aids obstetric cleanliness. I also agree with Dr. Schatz that too early delivery and too many operative deliveries undoubtedly increase the amount of sepsis. Nevertheless, I think that in our clinic my associates and I have tried hard to have a clean technic. Chart 3 showed that as the percentage of deliveries went up the percentage of infection did not go up; in fact, the percentage actually went down. Nevertheless, sepsis still occurs, and it seems to me that aseptic technic alone is not going to prevent all the cases of infection. The only way to succeed in stamping out infection is by more perfect obstetric technic from every possible aspect.

INJURIES TO THE INTERNAL AND EXTERNAL LATERAL LIGAMENTS OF THE KNEE

A CONSERVATIVE METHOD OF TREATMENT

FRANK G. MURPHY, M.D.
CHICAGO

Simple injuries to the internal and external lateral ligaments of the knee are fairly frequent in this day of automobile accidents, but complicating injuries to adjacent knee structures are of such frequent occurrence that to confine one's theme entirely to simple injuries involving the lateral ligaments is rather difficult. The injuries to the internal lateral ligament are far more numerous than those to the external ligament, the proportion being about ten to one in my experience.

Mechanically and physically, the knee joint is a weak, unstable structure made up of the end articulations of the femur and tibia, with the patella, which is really a sesamoid bone, gliding over the articular surface of the femur as it is flexed or extended. The integrity of the knee joint lies in the splendid arrangement and great strength of the ligaments which surround it and fortify it against derangements. The joint capsule, attached above to the femur and below to the tibia, entirely encloses the joint and embraces all the ligaments which surround it. These ligaments, practically speaking, are reenforcements to the capsule. The arrangement of the cartilages, the muscles and the tendons which pass over the knee joint also assist in protecting it against injury.

The internal lateral ligament is a long, strong, strap-like band extending vertically from the inner condyle to the tibia, just above the level of the inner end of the oblique line. Practically, it is a thickening of the capsule, and as such its deep fibers have an attachment close to the articular edge of the tibia and on the inner peripheral area of the internal semilunar cartilage. Its femoral attachment is just below and behind the adductor tubercle, at least a half inch from the articular surface to allow for movement. There is a much longer area, free from any deep attachment, between the upper end of the internal lateral ligament and the semilunar cartilage than there is between the cartilage and the tibial attachment of the ligament. It is in this free space above the internal semilunar cartilage that rupture usually occurs. The femoral attachment is about the center of one part of a curve in which the tibia moves in flexion, so that stability is maintained in flexion up to a right angle. Beyond this the arc of the circle is smaller and the ligament relaxes.

An important anatomic consideration is the point of attachment of the upper end of the internal lateral ligament, which is just below and behind the adductor tubercle. This point is the center of the arc of a circle described by the condylar articular surface of the femur. Its attachment to the tibia extends over a larger area, the deeper fibers attaching at the articular border and the more superficial fibers extending down on the shaft, a distance of nearly 2 inches, to the oblique line. As the tibia is flexed from 180 to 90 degrees, the distance between the center and the periphery of the circle described is not changed. Whether the knee is in extension or flexion up to a right angle the ligament is always tense. Above a right angle there is slight laxity due to the smaller arc at this portion.

The external lateral ligament attaches to the outer side of the external condyle at a point above the articular area, corresponding to the area of attachment of the internal ligament. Its lower attachment is on the upper end of the fibula. It is also tense during flexion of the knee up to a right angle. Therefore, the lateral ligaments make for lateral stability not only in extension of the knee but during flexion up to a right angle.

The principal etiologic factor in rupture of the lateral ligaments is direct force. The knee is in a position of extension or slight flexion, the foot is firmly fixed, usually in a standing or walking position, and the direct force is applied to the outer side of the knee, such as is seen in the flying tackle. The force is so great that either a fracture occurs or some other structure gives way, and usually it is a lateral ligament. Injuries to the internal ligament are more frequent because most injuring forces come from the outer side, while those coming from the inner side would be interfered with by the other leg.

All grades of injury may occur from a simple tearing of some of the deep fibers to a complete rupture of the ligament with the rent extending transversely through the capsule of the joint on either side. The rupture usually takes place just above the internal semilunar cartilage, but it is possible for the ligament to be torn at either of its attachments or at its attachment to the semilunar cartilage, thereby causing another serious complication. The external lateral ligament has no attachment to the external semilunar cartilage and, therefore, injury to that cartilage rarely occurs, notwithstanding the severity of the injury to the ligament.

The complications that are not infrequently seen in cases of injury to the lateral ligament are:

1. Bloody effusion in the joint. This can usually be controlled and is absorbed under pressure in from seven to ten days.

Read before the Section on Orthopedic Surgery at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

2. Injuries to the internal semilunar cartilage. These include dislocation, partial dislocation of either horn and the various types of fracture.
3. Fractures: (*a*) intra-articular; (*b*) extra-articular.
4. Injuries to the crucial ligaments.

SYMPTOMS

A certain amount of pain is present from the beginning and usually grows worse as effusion occurs. Swelling, eliminating the parapatellar spaces, rapidly occurs. Lateral instability is present in all cases. If other injuries, such as fractures, occur, there is absolute disability. If there is only a slight tearing of the ligaments there may be only tenderness on deep pressure over the strained area.

Physical examination reveals tenderness over the area of injury. Usually this is found just below the adductor tubercle, above the semilunar cartilage. The most important diagnostic sign is lateral deviation with the knee in extension. It is demonstrated by firmly holding the condyles in one hand and gently deviating the leg with the other hand until resistance is encountered by the remaining fibers of the capsule or muscular structures. This angle may be from a few degrees to as great as 30 or 40 in the more severe cases. During the first few days after injury this procedure causes little or no pain. If severe pain is produced by deviation, it means that other structures are injured.

Rotary movement, which normally is absent on extension and limited to a few degrees on flexion, is increased in varying amounts, depending on the extent of the tear and whether or not the anterior crucial ligament is ruptured.

There is no hyperextension in simple rupture of the lateral ligament. Roentgenograms should always be taken to rule out possible fractures, avulsions or chip fractures.

TREATMENT

Immobilization is the first and most important measure, and the application of pressure to prevent further swelling is the next important step in the acute stage. This can be accomplished with a basket splint, a moderately tight bandage over padding and the elevation of the leg above the plane of the body. In simple rupture of the internal lateral ligament the torn edges can be approximated by simply adducting the tibia on the femur to its normal position, in extension.

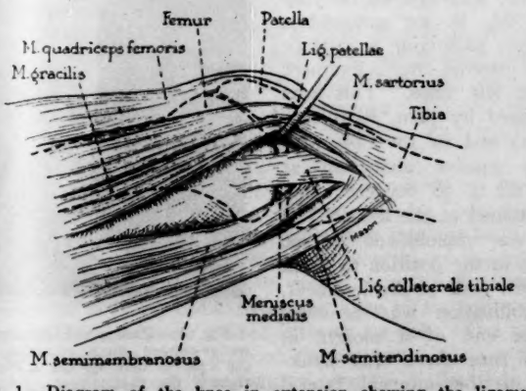

Fig. 1.—Diagram of the knee in extension showing the ligamentum collaterale tibiale tense.

The lateral ligaments, being composed of fibrous connective tissue, do not contract when ruptured. On the contrary, the torn edges fall together as soon as effusion subsides. Healing takes place by organization and scar tissue formation, which causes a firm union. The position of extension to 180 degrees is strongly recommended here for several reasons:

1. The edges of the ruptured ligament itself can be approximated.
2. The patient can be made ambulatory, thus avoiding weeks of helplessness in bed.
3. Constant use of the leg immobilized at the knee promotes circulation, prevents atrophy and hastens convalescence.

When the swelling subsides the leg is immobilized in a skin-fitting plaster cast extending from the groin to the toes. No padding is used, and the cast is firmly and accurately molded to the leg as it is setting. A walking iron of the Böhler type is incorporated in the cast and the patient encouraged to walk. During the first ten days the thigh undergoes some atrophy, the cast becomes loose and may fail to immobilize the knee entirely. To overcome this, a wedge of the cast, base upward and apex toward the knee and of a width corresponding to the shrinkage in the thigh, is removed. The lateral edges of the cast are then forcibly approximated and the whole enclosed with a few rolls of fresh plaster. The cast now again snugly encloses the thigh. This process can be repeated at a later date if more atrophy takes place.

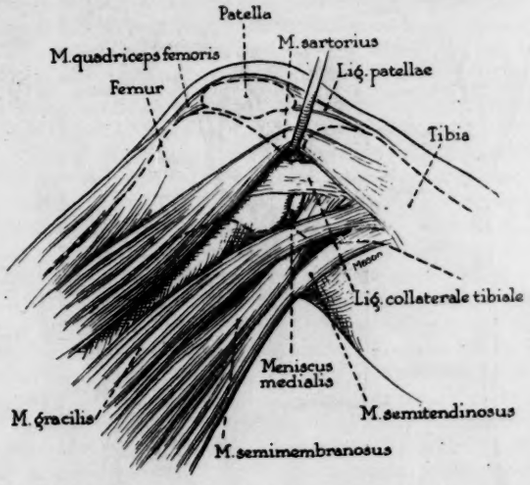

Fig. 2.—Diagram of the knee in flexion showing the ligamentum collaterale tibiale tense.

The duration of cast application differs according to the severity of the rupture. In mild cases the cast should be on for not less than six weeks. In more severe cases with absolute rupture of the ligament and extension into the capsule on either side, healing will necessitate use of the cast for ten or twelve weeks. During this time the patient is allowed to walk by means of the U-shaped walking iron. The heel of the opposite shoe must be raised to allow for clearance of the iron.

After-Treatment.—When the cast is removed, flexion in the knee is limited to a few degrees but the lateral mobility has disappeared. Over the site of the injury there is felt a somewhat boggy and slightly swollen area, probably due to the healing process. On gentle passive lateral force no pain is felt and lateral motion is not present, but if this force is greatly increased, there is felt some pain. Stretching of the newly healed tissue may allow a small degree of movement. Gentle active movements are now allowed. The patient is warned against any possible slip which can easily cause injury to the newly formed tissue.

Strength returns gradually with use. To restore flexion in greater range massage and other physical therapeutic measures may be instituted. However, in my experience, with the exception of a case of hypertrophic arthritis, the undesirable sequelae of stiffness in the knee has not been encountered for a period of longer than from eight to ten weeks.

Postoperative Complications.—If, on removal of the first cast, it is found that immobilization has been of too short duration and the ligament has not thoroughly healed, the whole leg must again be placed in a cast as before. It is essential that immobilization be maintained until repair of the ligament is accomplished. Some of the more common complications following improper repair and inadequate immobilization are weakness of the knee, lateral instability, frequent sprains and other injuries caused by slight provocation, dislocation of the semilunar cartilage and limited motion. Some of these conditions necessitate the use of knee cages and knee braces to make for stability.

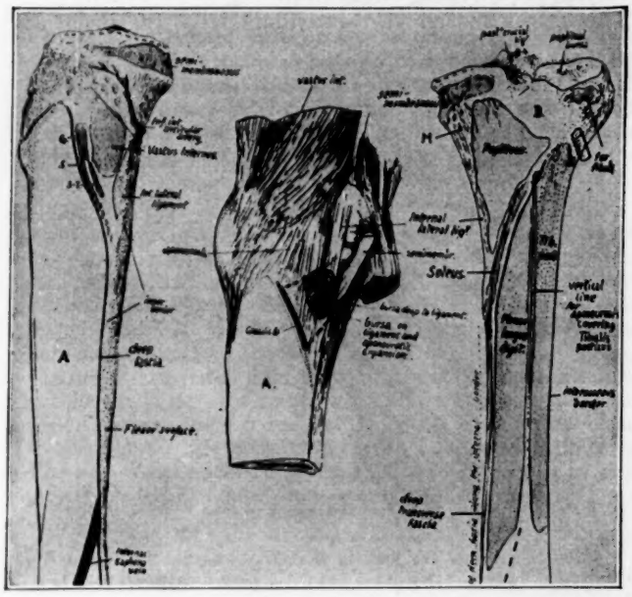

Fig. 3.—Photograph of dissection of the knee showing attachments of the ligamentum collaterale tibiale. (From Frazer.)

Operative Treatment.—Chronic cases that have not had proper immobilization from the beginning, and that have resulted in a permanent laxity of the knee with its attendant instability, require more radical treatment. In these cases the constant and frequently repeated injuries result in scar tissue formation about the torn edges without union taking place. Unless stability can be secured by operative measures, the patient at all times has to guard against sprain or must wear an appliance on the knee.

In conclusion, importance is placed on the immediate proper diagnosis, effective immobilization for a length of time sufficient to permit healing, and physiologic use of the leg by means of a cast and walking iron during the convalescence.

REPORT OF CASES

CASE 1.—S. K., a youth, aged 19, was injured in an automobile accident on Nov. 15, 1931, sustaining a rupture of the internal lateral ligament of the left knee. The leg could be deviated outward at the extended knee so that a distinct depression could be felt between the internal condyle and the tibia. No injury to the internal semilunar cartilage could be demonstrated. The knee was immobilized in a Thomas splint for one week. Effusion had subsided by that time and a tight fitting cast was applied in full extension from the groin to the toes. A walking iron was also applied and the patient allowed to walk. On December 9, there was considerable shrinkage and a wedge, base upward, was removed from the cast. The edges of the cast at the wedge were approximated so as to tighten the cast on the femur and the whole enclosed with plaster. On Jan. 15, 1932, two months after the injury, the cast was removed. Examination revealed the ligament had united; there was no deviation with moderate force but there was some slight swelling at the site of the injury and 15 degrees of flexion. This range of movement rapidly increased so that on February 10, there was flexion to 60 degrees and the knee was stable and strong.

CASE 2.—B. L. R., a man, aged 24, a railroad fireman, was injured on Sept. 24, 1925, by falling from a rapidly moving engine. His injuries were a compound comminuted fracture of the lower third of the femur with a T-fracture extending into the knee joint, rupture of the crucial ligaments and rupture of the internal lateral ligament. Treatment consisted in operative reduction of the fracture, skeletal traction from the condyles with daily mobilization of the knee, care being taken to avoid external deviation and to keep the ruptured ends of the internal lateral ligament approximated. Later a plaster cast in extension was applied. The fractures united and the internal lateral ligament healed. On examination, Feb. 24, 1926, there was 30 degrees of motion of the knee but no lateral motion. On extension to 180 degrees there was considerable anteroposterior sliding of the tibia on the femur, showing that the anterior crucial ligament had not healed.

CASE 3.—F. W., a man, aged 54, was injured on March 14, 1926, in an automobile accident. The left external lateral ligament was ruptured so that the extended leg could easily be adducted at the knee to an angle of 30 degrees without much pain. There was much swelling because of effusion into the joint. The knee was immobilized in extension with relaxation of the external lateral ligament. As swelling subsided, splinting was more carefully molded to maintain the position. At the end of five weeks there was only a slight amount of internal deviation with fairly good union of the ligament. It took considerable time for the patient to develop full flexion in the knee, but as he did so, there was no further lateral instability. This patient was seen, Jan. 3, 1932, with a perfectly functioning knee.

Fig. 4.—Photograph showing the wedge-shaped piece removed from the cast to take up the laxity and tighten the cast.

CASE 4.—H. A., a man, aged 63, was injured on July 27, 1923, in an automobile accident, sustaining a rupture of the internal lateral ligament of the left knee. This was diagnosed by pain, local tenderness and by the ease with which passive abduction at from 25 to 35 degrees could be obtained at the knee. The knee was immobilized for one month in the position to relax the torn ends of the ligament. Immobilization was removed at the end of a month, at which time there was weakness of the internal lateral ligament demonstrated by its rubber-like elasticity on passive abduction. This continued to tighten up, and at three months after the injury there was no lateral motion.

The following case is cited to demonstrate the extreme degree of injury that may occur to a lateral ligament without injury to the skin, compound fracture or other fracture.

CASE 5.—J. J., a telephone wireman aged 45, weighing 200 pounds, was working at the top of a pole when the lower end gave way and he fell with the pole a distance of 40 feet. He

was seen shortly after the accident when examination revealed a complete rupture of the internal lateral ligament and the capsular ligament anteriorly. His leg could be deviated, abducted at the knee for at least 45 degrees without much pain. There was probably a rupture of the crucial ligaments. The internal part of the capsule and the ligaments were relaxed with the knee in extension and the leg immobilized in a cast before marked effusion took place. Further data on this case are lacking.

CASE 6.—G. B., a man, aged 67, was injured on Nov. 1, 1925, in an automobile accident. Examination showed a comminuted fracture of the upper end of the right fibula and a rupture of the right internal lateral ligament. The torn ends of the ligament were approximated by adduction of the leg at the knee; the fractures were reduced and a cast applied from groin to the toes. Three weeks later the knee was inspected, and it was found that the leg was quite movable in abduction at the knee, showing that the ligament had not healed. A cast was reapplied, and six weeks after the injury it was again inspected and union of the internal ligament was found to be quite firm. On Jan. 25, 1926, the patient was walking without crutches and there was flexion to 90 degrees.

CASE 7.—M. L., a woman, aged 24, was injured in an automobile accident on Nov. 23, 1931, sustaining an oblique fracture through the external tuberosity of the tibia from the articular surface downward and outward and a ruptured internal lateral ligament. This was diagnosed by a small amount of passive outward deviation on the extended knee. The patient was seen December 1, at which time the fracture was in good position and the swelling had subsided. The knee was immobilized in a tight fitting cast extending from the inguinal region to the toes. She was allowed to put some weight on the foot. On December 20, the cast was bivalved and removed. Gentle manipulation showed that the internal lateral ligament had not healed but there was considerable elasticity in it. The cast was reapplied. Three weeks later the knee had regained its stability and the ligament seemed strong. The patient walked with only a slight limp, and range of motion rapidly increased.

CASE 8.—T. S., a man, aged 23, was injured on July 4, 1930, by jumping to the side and down a distance of 5 feet. His leg collapsed under him and his knee was painful and useless. Examination on July 5, showed moderate swelling with effusion, tenderness about the knee, more marked over the external lateral ligament, discoloration due to hemorrhage over the head of the fibula and laxity of the external lateral ligament, demonstrated by gently deviating the leg inward with the knee in extension. This deviation angle was up to 10 degrees without causing much pain.

The leg was immobilized in a cast extending from the inguinal region to the toes. After seven weeks the cast was removed and examination revealed that there was no lateral movement and no tenderness or pressure. Flexion of the knee rapidly increased and full function and movement returned.

CASE 9.—K. P., a woman, aged 22, was injured on June 10, 1929, by falling from a ladder. She sustained a T-fracture of the upper end of the right tibia extending into the knee joint but without displacement. There was a rupture of the internal lateral ligament diagnosed by the ease with which the extended leg could be deviated outward at the knee to an angle of 20 degrees. This maneuver caused little or no pain. The patient was seen within one half hour of the accident. A tight fitting cast was applied from the inguinal region to the toes. On July 26, seven weeks after the injury, the cast was removed and the ligament found to be still lax. The cast was reapplied. The cast was removed and reapplied several times, but it was not until November, 1929, five months after the injury, that the ligament had properly healed and the knee was stable.

CASE 10.—C. R. C., a man, aged 39, was injured in an automobile accident on March 31, 1932. He sustained multiple fractures, contusions and sprains. A rupture of the internal lateral ligament of the left knee was not diagnosed until three days later when the patient complained of pain, and on examination there were found tenderness and the passive outward deviation on the extended knee to about 10 degrees. The knee was immobilized by applying a skin-fitting plaster cast from hip to toes. He is still in bed because of fractures of the skull, rib, os calcis, clavicle and ulna, but his knee is absolutely painless. A walking iron would be applied if his other injuries would allow him to be up and about.

CASE 11.—W. O., a man, aged 25, was injured in an automobile accident on April 4, 1932. His injuries were fractures of the pelvis and transverse spines of the lumbar vertebrae, numerous contusions and abrasions, and a rupture of the internal lateral ligament of the right knee. This was diagnosed by the local tenderness over this area and the usual deviation outwardly of the passive leg on the knee in extension. This was about 5 degrees and caused pain, showing that some of the fibers were still holding. A plaster cast was applied from the groin to the toes immobilizing the knee in extension. His knee is absolutely painless and, if his other injuries would permit, a walking iron would be applied.

CASE 12.—I. J., a woman, aged 24, was injured in an automobile accident on May 26, 1931, sustaining a fracture of the right fibula, rupture of the internal lateral ligament and rupture of the external lateral ligament of the right knee. The extended leg could be deviated 30 degrees inward at the knee, moderate force being used. It could also be deviated outward about 30 degrees. This was not very painful. Anterior and posterior movement was absent whether the knee was in extension or flexion. Diagnosis was made of rupture of the internal and external lateral ligaments of the right knee. Swelling subsided while the knee was immobilized in a basket splint in four days. On May 29, the leg was immobilized in a cast extending from the toes to the inguinal region. In a few days a wedge was removed as described and the circumference of the cast reduced; a walking iron was then applied and the patient allowed to walk. On July 23, eight weeks after the accident, the cast was removed. At that time the internal lateral ligament was healed and allowed no external deviation on gentle passive abduction. The external lateral ligament stretched slightly on moderate internal passive deviation. There was only 10 degrees of flexion. The patient was allowed to use her leg without support but with care. Flexion of the knee returned moderately fast. The external lateral ligament remained slightly lax for a long time. On October 13, motion, strength and stability had, to a large measure, returned, but there still remained a slight laxity of the external lateral ligament on inward deviation of the leg at the extended knee.

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ABSTRACT OF DISCUSSION

DR. C. B. FRANCISCO, Kansas City, Mo.: I endorse Dr. Murphy's plan of managing these cases. I had a feeling that the people generally haven't realized the importance of taking proper care of this type of injury. The difficulty comes in recognizing that degree of injury. My observation has been that the lesser tears and sprains of these injuries lead to a considerable disability. I have come to regard the injury to the lateral ligaments with a great deal more seriousness than I have the injury to the crucial ligaments. I should like to ask Dr. Murphy why he thinks it is important to use the walking iron. I have done the immobilization a good deal as he does it except that I used more padding, but I have allowed these patients to walk without the iron. I believe in getting them up and getting them about and in keeping the protection on a little too long rather than not long enough.

DR. L. D. SMITH, Milwaukee: The stretching or actual rupture of the tibial collateral ligament is of special significance in its relation to the internal meniscus and its attachments. I am persuaded that not a few of the puzzling conditions about the periphery of the meniscus may be the result of rupture, hemorrhage and organization of the vascular tissue in this region in association with primary but unrecognized injury to the collateral ligament. In examination for lateral mobility I find it convenient to fix the patient's ankle in my axilla, grasping the extended knee with both hands. This affords positive control, and small degrees of lateral deviation can be detected and at the same time stability in the anteroposterior plane to eliminate injury to the crucial ligaments can be tested. Early treatment

must be along the line of immobilization to promote healing of the stretched or torn ligaments. In the after-treatment I should have liked to hear Dr. Murphy stress more the importance of active exercise and development of the supporting muscles, particularly the quadriceps. Potentially the knee is structurally weak. By its location and mechanical leverages it is the most exposed and vulnerable joint in the body, and, barring the numerous intrinsic or internal derangements to which it is subject, in its larger aspects it is probably the most stable. This stability is due to the fortuitous inter and cross lacing of its activating muscles from the leg and from the thigh, bridging across the line of articulation and investing the joint. An insufficiency of this musculature may have existed, conducing to the injury; an insufficiency must obtain incident to the immobilization treatment. In any case, these muscles should be toned up and strengthened by a systematic regimen before the patient is permitted unrestricted activity.

DR. PAUL A. QUAINTANCE, Los Angeles: That accurate diagnosis is difficult is evident from the still too frequent use of the term "internal derangement" of the knee in these injuries. Especially is this true when multiple injuries have occurred to the ligaments and other structures of the knee joint. I wish to illustrate this point and the value of pneumoradiography in diagnosis. A laborer was caught in a landslide which forced his left leg outward at the knee. The roentgenogram revealed a fracture-tear of the external lateral ligament on the femoral side. After being treated by this physician for eight months and on account of persisting pain, this patient was referred for examination. I elicited a history of locking during the preceding month. Suspecting a lateral cartilage injury, I injected air into the knee joint and took roentgenograms. The first pneumoroentgenogram showed a thinning of the lateral cartilage and a slight narrowing of the joint space. After the injection of an additional 40 cc. of air, a second film clearly showed the break in the continuity of the lateral cartilage. The joint space does not present the same degree of density as that on the medial side, where a normal medial cartilage shadow is seen. A shadow extending upward into the lateral compartment of the joint, I took to be the displaced cartilage. Three months after examination operation was done. The medial cartilage was exposed first and was removed. I insisted on the lateral side of the joint being opened up, and the diagnosis of fracture of the lateral cartilage was confirmed. The fracture involved the junction of the anterior and middle portions of the cartilage. The anterior horn was entirely separated from its attachment to the tibia. This portion of the cartilage was reduced from a normal of 8 mm. to 2 mm. in thickness. It was soft and flabby and had the feeling of fatty tissue. When solution of continuity of the cartilage has taken place, it can be demonstrated roentgenographically following induction of pneumarthrosis. In another case the line through the anterior portion of the medial cartilage was diagnosed as a fracture and operation confirmed the diagnosis.

DR. FRANK G. MURPHY, Chicago: In many of my earlier cases I believe that I did not make a correct diagnosis and that some of the chronic cases that present frequent injuries, and not only injuries but complaints, are due to the chronic condition in these ligaments that have not properly healed. I feel that if they were properly immobilized in the first place and allowed to heal they would not have a subsequent condition of laxity. To show what these ligaments will do without an open operation, I saw a patient at the County Hospital who had a complete dislocation of the knee laterally. This was reduced and nothing more than a tight-fitting plaster-of-paris cast was kept on for two months. That patient has as perfect a result as I could wish for, with probable regeneration of the crucial and other ligaments. I find that by using the walking iron it is the easiest way for me to get these patients about. I don't believe it is any better than having some other device, but the walking iron raises the foot a little. They can walk with more ease than they can with any other walking appliance. By walking about the patient prevents a considerable amount of atrophy in these muscles. As he is convalescing and has physiologic use of the leg most of the time, there is a certain amount of contraction going on. I agree that in many cases physical therapeutic methods or measures are not required, because they remain atrophic for quite a long time following fracture of the leg, or rupture of ligaments. In regard to the injection of air, I think that it is quite an ingenious procedure and it may be an easy means of diagnosis in some of the cases; a more accurate diagnosis, it seems to me, might be made if the cartilage is separated from the internal or external lateral ligaments, as the case may be.

STRUCTURAL AND FUNCTIONAL CHANGES IN URINARY TRACT FOLLOWING FOCAL CORD LESIONS

ROBERT E. CUMMING, M.D.
DETROIT

When the spinal cord has been injured or its function gravely impaired by pressure as from a tumor, the first consideration of the medical attendant beyond actual support of life and the protection from further immediate injury and disease should be directed to the function of the bladder. An early if not an immediate problem is concerned with the emptying of the victim's bladder, and since catheterization is a simple procedure it is chosen as an easy solution. I believe that the greatest remote danger, and, indeed, one not always remote, lies in this practice, for renal infection has probably always followed and those patients who might recover from the cord injury or disease either succumb or are seriously impaired in health by renal damage. It is likely that those instances which seem to prove a relative safety in this catheter method of early treatment, if carefully investigated at late periods, would add to the strength of this position against the method. The premise implied by these remarks is that drastic functional changes in the bladder occur promptly, followed by more or less permanent anatomic changes with primary and secondary variations in ureteral function. Both vesical and ureteral functional changes affect the kidneys, based particularly on an etiology of pressure and infection.

That some patients do survive is common knowledge; the limited functional studies forming the basis of this paper were made on a series of patients, including several who were subjected to catheterization over shorter or longer periods as detailed. In some instances there are striking differences between the degree of involvement of the two kidneys and ureters; I can offer no explanation for this phenomenon, but can state that the right kidney and ureter, in my experience, have been the more seriously damaged. In one case right nephrectomy was necessary for massive pyonephrosis. This patient recovered, with an intact and healed kidney on the other side.

It is my purpose to record the situations which arise in patients who survive the immediate effects of cord lesions. Only type histories are abstracted, each being illustrative of a group. So much has been pronounced and written concerning the proper handling of the urinary tract affected with myelitis that every one is aware of the common observations made, and I have chosen a line of procedure that is customarily followed. I myself postpone the use of catheters in any instance of paralysis of the bladder, as I believe that almost without exception some form of incon-

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Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

tinence or automatic emptying can be established. I[1] recently reported success in establishing the desired overflow by the cautiously repeated use of an anesthetic at the sacral hiatus (caudal method), and I have found this a means of carrying the patient along until spontaneous overflow is established. Contrary to former criticism on my part, I now believe that there is some virtue, especially under circumstances of an emergency nature, in the prompt establishment of drainage of the bladder by cystostomy, the method given first place by Boyd[2] of Atlanta, Ga. An outstanding example of the satisfactory outcome of this method will be cited; the patient, however, developed an automatic bladder later, and, having escaped severe renal damage, made a remarkable recovery from the paralysis, which could not be distinguished early from that of a permanent nature. The patient is now alive and reasonably well after more than thirteen years. The residual neurologic findings in this case will be given, together with a résumé of a recent urologic study (case 1).

The following topics are uppermost in one's mind in the consideration of this subject:

1. Function of the bladder following cord lesions.
2. Treatment of paralysis of the bladder.
3. Functional changes in the bladder, especially in so-called recovered cases.
4. The rôle of ascending infection in paralysis of the bladder.
5. Changes in ureteral and renal function associated with progressive periods following paralysis of the bladder.
6. The disarrangement of motor function in the urinary tract after injury to the cord.
7. Immediate and remote treatment of the entire urinary tract following injury to the cord and paralysis of the bladder.
8. Life expectancy as related particularly to urinary function.

In this brief report these topics are submerged; many of the questions involved are covered so far as the records of a small series of cases may be suggestive. Late investigations have centered around the study of motor phenomena by means of an x-ray camera with serial urography, and since I oppose instrumental procedures, I have had to rely on intravenous mediums, which have often been disappointing owing to the interference of gas shadows and poor concentration of mediums in the lumens of the tract. In some instances unsatisfactory urograms have been due to the rapid elimination of the drug. One study comprises series of films made by the retrograde method and by the intravenous use of skiodan. The patient's life has been prolonged many months by repeated ureteral catheter drainage for advanced bilateral pyonephrosis (case 3).

Secondary only to my interest in ascending infection and the common fatal outcome in cases of paralysis of the bladder are the motor transport mechanism and the interference with its natural and normal functioning in those presumably fortunate patients who survive their injury. If the ureters are involved, there is little remaining of propulsive force except that arising in the kidney itself. Further, if atony of the ureter produces hydronephrosis, the kidney is of necessity hampered, leaving the pressure of the urine as the only propelling force, outside of the questionable action of gravity itself. So, therefore, there is an unbalanced state, with vesical pressure, the importance of which has been stressed by Rose and others, and combating renal pressure, with the ureters between, their activity being influenced by the original nerve injury and later pressure and infection.

For the neurologic basis of vesical and ureteral atony one must remember that the cord involvement includes damage to the visceral horn cells, located in the lateral columns of the anterior horn, and, also, that one reflex center cannot be involved without some involvement of another reflex center. This overlapping may account for changes in the subjective progress of a case from time to time and, likewise, for the unequal involvement of the ureters in a given case.

ANATOMIC AND FUNCTIONAL CHANGES IN THE BLADDER

Changes in the bladder following injury to the spinal cord are considered to be first a state of retention due to involvement of both sphincters in the male and of a single sphincter in the female; this transitory state is of a reflex nature, and has been called a shock phenomenon. Following this, in the male, the internal sphincter relaxes owing to damage to the nerve and the external sphincter remains more or less tonic, seeming to become stubbornly so in some instances. In the female, according to a careful study of three cases over periods ranging from nine months to six years, the sphincter may become and remain relaxed, with true complete incontinence associated; it may respond in the way of an automatic bladder, or it may regain its tone to the point of no leakage following permanent suprapubic drainage. This last state can be transformed to either a constant leakage or an intermittent emptying, according to the case and, at will, by blocking the drainage tube. After decentralizing bladders, Elliott[3] found an overgrowth of muscle fibers making an unusually strong potential sphincter, a natural attempt to continue the original hypertonicity of the latter, but cystoscopic observations have always shown a relaxed vesical neck. It is important to realize that this typical visible indication of a cord bladder does not manifest itself at once, nor are the well known trabeculations present until late. I have seen instances in which a diagnosis of temporary paralysis or atony, giving license to free local treatment and catheterization, has been made because the bladder did not show these recognized signs.

From a purely functional standpoint, then, the bladder proceeds from the primary stage of shock with retention to the succeeding stages of passive incontinence, termed paradoxical, active or periodic incontinence and complete (paralytic) incontinence. In the last state, the emptying of the bladder is constant and complete. There is no residual urine. I have observed that in such instances in the male, given reasonable freedom from early catheter infection, the upper urinary tract remains inviolate from infection, whereas in the female, ascending infection and reinfection go on relentlessly. In the latter sex, active incontinence is to be preferred, and there is more evidence in hand for the wisdom of controlled suprapubic drainage than in the male. Anatomically, the bladder becomes flaccid, accommodating varying amounts of residual urine and presenting the appearance referred to, or contracted and thick-walled, with a limited capacity, with dilatation of the internal sphincter and less marked trabeculations, depending on, or at least associated with, the type of emptying it assumes. It has often been observed that a bladder with a considerable residual content will not tolerate as much of a solution introduced for irrigation

1. Cumming, R. E.: Shell Fracture of the Spine and Changes in Kidney and Bladder Function, J. A. M. A. **78**: 335 (Feb. 4) 1922; Bladder Paralysis: Etiology, Prognosis and Treatment, J. Michigan M. Soc. **28**: 5 (Jan.) 1929.

2. Boyd, Montague L.: Suprapubic Cystostomy in Bladder Paralysis, J. Urol. **18**: 413 (Oct.) 1917.

3. Elliott: J. Physiol. **31**: 157, 1904.

or cystoscopic observation. Nor do true diverticula develop, so far as is known, even in those cases with a large residual average.

From the urographic standpoint, the bladder is not productive of much of interest; the dilated internal sphincter is easily demonstrated. In one of the patients already referred to, a recent study showed this condition, which was quite evident thirteen years previously, to be entirely absent, the cystogram appearing quite normal (case 1).

ANATOMIC AND FUNCTIONAL CHANGES IN THE URETER

Changes in the ureter, which, as stated, depend first on primary damage to the nerve tissue, causing the paralysis of the bladder and coincident damage to the extrinsic ureteral nerve supply, the branches from the spermatic nerves, the hypogastric nerves and the renal plexus, especially, are further dependent on the intrinsic

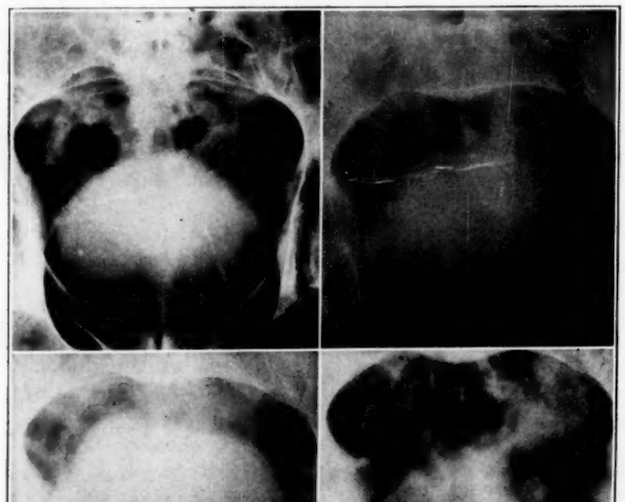

Fig. 1 (case 1).—Four cystograms of the intravenous urographic series, taken thirteen years after fracture of the spine and paralysis of the bladder. Recovery (see text case 1). The first cystogram was taken fifteen minutes after the administration of an iopax derivative. The second, fifteen minutes later, immediately after the patient had voided in the prone position. Note the residual urine. The third cystogram was taken thirty minutes later; it shows the filled bladder, with an irregular outline (residual atony). The fourth cystogram was taken thirty minutes later, after the patient had voided in the erect posture. Note the smaller amount of residual urine. All films show recovery of the internal sphincter.

nerve supply of the ureters themselves and on the effects of pressure and infection. Therefore, no two patients will present the same situation as to ureteral function, nor will the two ureters in a given patient respond in the same way. I have already referred to the preponderance of involvement of the right side. Just as many a paralytic bladder cannot be described as purely atonic, so that term does not describe many of the ureters in my series. There would appear to be some neurologic basis on which this single-sided ureteral involvement can be predicated, as suggested, but such does not seem logical in accounting for the variances in bladder tone. Again, in the ureter one must assume that pressure and infection play some part in the rôle of producing atony, when it exists.

Atony of the ureter may be complete or segmental. It implies a paresis of all or part of the ureteral musculature. The normal function of peristalsis is naturally impaired or absent. It is my purpose to find out whether atony occurs after paralysis of the bladder and injury to the cord, and whether it results in a progressive interference with ureteral function and renal activity. This question would seem to be the crux of the whole problem in the care of patients with paralysis of the bladder, because the incompetence of kidneys to withstand long periods of back pressure, so well recognized in prostatic surgery, is a definite factor here. It would provide an argument for early and continuous emptying of the bladder, as by suprapubic drainage. It does not consider the greater factor of infection, however, and my functional studies, from the angle of both motor activity and the data from renal function tests and chemical analyses of the blood, fail to be convincing for evidence of a great rôle in back pressure. If it were dominant, more instances of hydro-ureter and hydronephrosis would surely have come to my attention. Neither in those cases reported shortly after the World War nor those with which I am especially concerned now has this dilatation been found to any remarkable degree. On the contrary, excellent physiologic activity approaching the normal can be demonstrated in most of the ureters and in many of the renal pelves. Parenthetically, it may be said that experience proves outright my contention that patients with paralysis of the bladder, after recovering from the original injury, usually die of pyonephrosis, and that at the autopsy table I have never seen marked hydronephrosis or hydro-ureter.

While, as Beach[4] recently stated, the peristaltic wave of reno-ureteral activity is probably generated by a reflex mechanism operating in the pelvis of the kidney, stimulated by pressure therein, the peristalsis of the ureter depends, for continuity on the impulses arising in the intrinsic nerve ganglions of the ureter itself, and various researches indicate that local injury or segmental interruption, perhaps even infection, interferes with these impulses for the carrying forward of peristalsis. So, therefore, in my interest to find changes in ureteral function, a search is made for evidence of atony, whether due to any or all of the causes mentioned, and if it is found, a functional disturbance is assumed. If, on the other hand, there appears to be no atony, one can, in the absence of other lesions, concede a normal state to the ureter in question. The simplest way of determining atony lies in the examination of serial ureterograms, and my own series indicate that atony is by no means common after paralysis of the bladder, with or without the suspicion of other etiologic factors.

There is reason to believe that ureteral atony may exist for a time, and recovery or improvement ensue. It is likely that many serial studies of the entire urinary cavity would be necessary to ascertain the possible degree and time element involved in such theoretical changes, which would, of course, be further influenced by the amount and permanence of damage to the nerve tract, pressure and infection, the same three factors already given so much consideration. Ureteral orifices in cord bladders show definite mutations, as can be readily seen at cystoscopic examinations repeated over a period of time.

4. Beach, Watson: Atony of the Ureter in the Production of Hydronephrosis, J. Urol. **25**: 367 (April) 1931.

Congenital atony, also, must be borne in mind, being an accepted entity usually associated with hydronephrosis and hydro-ureter on the same basis. In view of the data in hand, I believe that there is no need for confusion of this type with acquired atony, unless rarely, or when a given case is studied for the first time at a stage long after the onset of paralysis.

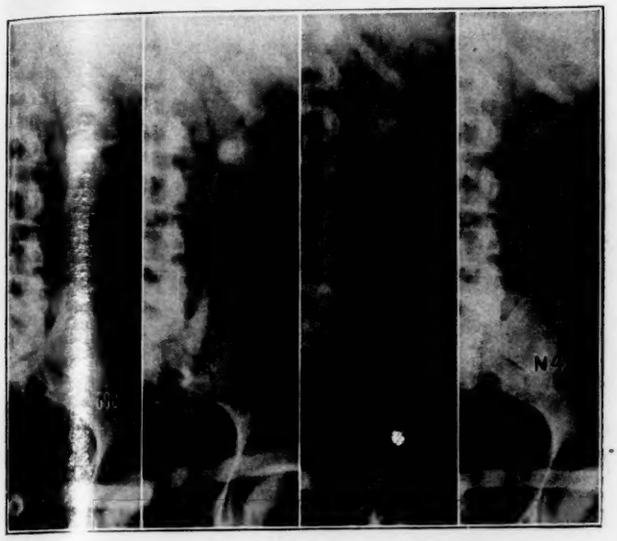

Fig. 2 (case 2).—Serial urogram (taken after the intravenous administration of an iopax derivative) of the right kidney; the paralysis is unchanged. Note the cystostomy tube and the excellent preservation of the pelvic and ureteral function.

CHANGES IN FUNCTION AND STRUCTURE OF THE KIDNEY

One may divide progressive variations in renal function into two phases, namely: changes in form affecting function and changes as measured purely by time-worn tests of chemical balance or secretory activity. Hydronephrosis, used as a term for infected as well as non-infected kidneys, is the condition with which I am most concerned; that it was not found in cases of injury to the cord coming to autopsy, in series of cases studied by us after the war, was significant, since in all instances considerable time had elapsed between injury and death. This same finding has continued to hold true whether death follows soon or late after injury, except in isolated cases, in which the possibility of antecedent pyelectasis of either congenital or acquired origin must be kept in mind. Certainly, in cases of continued permanent myelitis and in some in which various degrees of recovery have ensued, my studies do not show much tendency toward the formation of hydronephrosis, in spite of frequent instances of ureteral atony, segmental or complete. Beach,[4] in his quite complete research to determine whether such atony does cause hydronephrosis, concluded that segmental atony of the ureter, or any process preventing the passage of the peristaltic wave, with time as the only factor (i. e., disregarding infection and possibly pressure), is responsible for hydro-ureter and hydronephrosis in dogs and rabbits. Braasch,[5] as recently also related by Beach, gave the following etiologic factors for hydronephrosis: mechanical obstruction, infection and disturbance of innervation. I am concerned principally with the two latter causes and have found that what there is of hydronephrosis falls more into line with the hydronephrosis caused by infection, showing irregular blunting of calices with minor degree of dilatation and irregular pelves. A satisfactory conclusion as to the failure of patients with vesical paralysis to develop hydronephrosis, if this premise is true, may lie in the assumption that ureteral innervation has not been sufficiently disturbed; the intact ureter may even be responsible for protection in cases with a clean bladder and automatic emptying but a decided constant content of residual urine, although this theoretical aid does not prevent back pressure in prostatism according to the ordinary conception of the latter disease syndrome. However, ureteral atony is found, both segmental and complete, although I must confess that it is often in cases with gross infection. Furthermore, neurologic examinations by experts have indicated quite definite involvement of the ureteral zones in a number of instances in which atony was not found at a specified time of urographic survey.

I recall the general picture of unusually high urea nitrogen retention over long periods in cases of injury to the cord which usually preserve good phenolsulphonphthalein elimination totals, although in the standard two hour test, the early excretion is often poor. This nitrogen retention cannot be considered as due to injury shock after a period of weeks or months, and its significance is unimportant because, barring infection, improvement always occurs eventually. Case 8 illustrates the fact of completely normal renal function. Chronic infection outside the urinary tract may play a part in nitrogen retention. My findings, based on standard dye tests and chemical studies of the blood, indicate a surprisingly good continuity or recovery of renal function in all cases, with temporary deviations due to periodic infection or intercurrent disease.

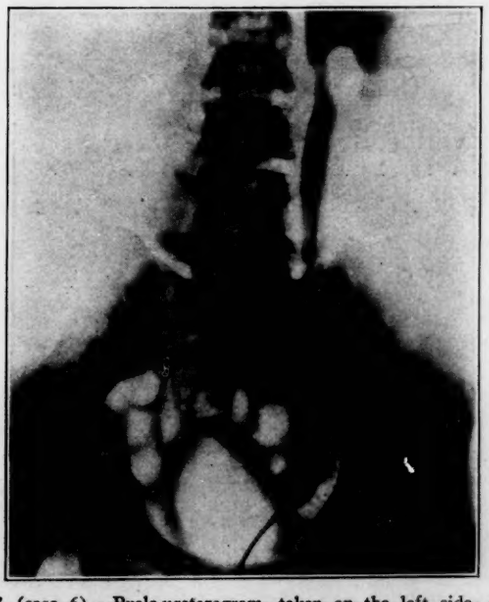

Fig. 3 (case 6).—Pyelo-ureterogram, taken on the left side, showing the congenital solitary kidney with paralysis of the bladder following a gunshot wound of the spine (see bullet in situ). Note the marked pyelectasis and atony of the ureter. Death ensued from pyonephrosis after recovery from the paralysis.

The abbreviated case reports represent instances of injury to the cord at levels from the fifth cervical segment to the cauda equina, and deal with four types of treatment: cystostomy, repeated catheterizations of the bladder, inlying urethral catheters and abstinence from all instrumentation.

5. Braasch, W. F.: Clinical Notes on Hydronephrosis, Interstate M. J. **21**: 1180, 1914; Dilatation of the Ureter and Renal Pelvis, J. A. M. A. **73**: 731 (Sept. 6) 1919; Data with Regard to Lesions of the Nerves of the Urinary Tract, J. Urol. **13**: 383 (April) 1925.

REPORT OF CASES

CASE 1.—A man, now aged 43, was injured by a high explosive while in action on Oct. 17, 1918. A foreign body lodged in the spine. There was destruction of the first lumbar vertebra. Laminectomy, amputation of the left leg above the knee and suprapubic cystostomy were performed on October 19. An inlying catheter was inserted prior to drainage of the bladder. There were a recognized loss of sensation below the waist and complete motor paralysis almost immediately after the patient was shot; he did not lose consciousness. He was catheterized a few hours later, without experiencing fulness in the bladder. He had no consciousness of bowel activity. The suprapubic drainage tube was removed after six weeks, and the wound healed promptly; as healing occurred, incontinence began. The patient, when examined in February, 1919, had paradoxical incontinence, which later became true incontinence. Cystoscopy showed a dilated internal sphincter with marked trabeculations on both lateral walls of the bladder. The posterior urethra was moderately dilated. The sex power was nil.

Outcome.—There was a gradual complete motor recovery with persistent sensory losses, especially in the suprapubic area and

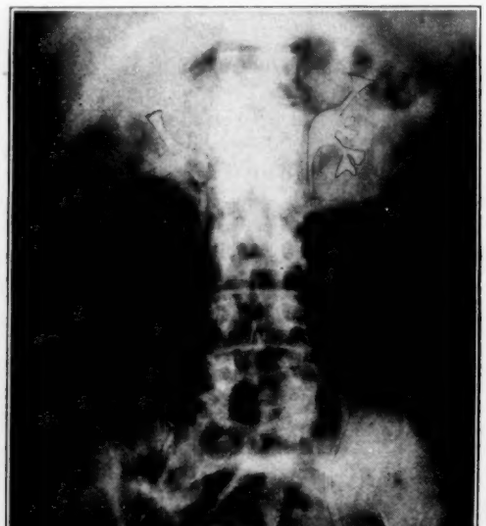

Fig. 4 (case 8).—Complete urogram (taken after the intravenous administration of skiodan). The study was made two and one-half years after spinal injury and permanent paralysis. Note the excellent preservation of the renal and ureteral function. There is one localized area of atony in the lower right ureteral segment. See figure 5.

in part of the genitalia. In spite of this, libido and sex sensation returned. The patient later married, and his wife had two children; his sex power was normal. While the patient was in the hospital, further amputations were performed, and left pyelonephritis associated with an impacted ureteral calculus was found, which was removed by ureterolithotomy. Spontaneous healing of the infection occurred.

Present Urologic Status.—There is no hydronephrosis. The patient has little, if any, evidence of ureteral atony. The urine was repeatedly normal on examination. The chemical composition of the blood was normal. The phenolsulphonphthalein test gave normal results. Residual urine was indicated by a cystogram. The patient has normal sex sensations and function. At times he experiences severe pain in the stump of the leg during the act of voiding; he also has mild persistent nocturia. The only important residual situation is the tendency to constipation and flatulence.

Present Neurologic Status.—The patient has no motor losses. There is a persistent loss of all types of sensory reactions in a limited zone of the perineum (saddle anesthesia) and in irregular areas of the scrotum on both sides.

CASE 2.—A man, now aged 29, was injured by a fall from a tree on July 10, 1928. There was immediate paralysis from the nipple line downward. He was catheterized regularly from the time of injury until July 21. At that time the urine was normal. Cystostomy was performed by Dr. Boyd of Atlanta, Ga., on that date. The patient had had suprapubic drainage ever since. There was complete permanent transverse myelitis. He had had occasional typical attacks of mild bilateral pyelonephritis. The urine had shown pus since November, 1928, but never in large amounts. The chemical composition of the blood and the phenolsulphonphthalein excretion were within normal limits until the recent development of calculi. The patient's principal trouble was with bowel stasis and flatulence. During the past two years he had maintained or gained in weight; he was outdoors every day and carried on a business successfully; he had to be carried about. He underwent daily irrigations of the bladder. He used urinary antiseptics intermittently.

Urologic Status.—Urography showed no hydronephrosis; there was poor motor function of the left pelvis and ureter, due to an impacted stone in the lower segment, which had developed within the last year. The bladder was opened on Jan. 20, 1932, and a vesical calculus removed. The left ureter was exposed, and the ureteral calculus was forced into the bladder and removed. The wound for exposure of the ureter healed by primary union. Cystostomy drainage continued. A recent intravenous urographic study showed improvement of the left kidney and ureter, but also a small calculus in the lower part of the right ureter.

Neurologic Status.—This was the same as after the injury—complete paralysis below the waistline. There was transverse myelitis.

CASE 4.—A boy, now aged 17, was injured while diving on Sept. 9, 1929; he fell 13 feet into water, fracturing the fifth cervical vertebra. He became unconscious immediately and had to be pulled out of the water. The legs were paralyzed at once. Eight hours later laminectomy was performed, 1½ inches (3.77 cm.) of cord being exposed. Many fragments of bone were removed. There was no visible evidence of injury to the cord. The original diagnosis was complete paralysis (motor and sensory) downward from the nipple line. Urologic examination showed priapism and retention of urine.

Course After Operation.—The temperature was 100 F., or higher, the immediate range being to 105 F. for twenty-eight days. On October 29, chills and fever were attributed to pyelonephritis. Other attacks of similar nature occurred on November 3 and 26. There were no later severe attacks. The urine showed marked pyuria at the time of the original injury and at later periods of renal involvement.

Urinary Tract.—Because of immediate retention the patient was catheterized. He was catheterized for two weeks with great care and with less frequency as incontinence developed. There was automatic emptying of the bladder at the end of two weeks. A urinal was kept in place for several weeks. Gradually, a desire to urinate was noted, until the urinal was dispensed with. At first the patient could wait only a few seconds and could not control leakage. The condition has improved so that now he can wait several minutes after experiencing definite desire. Early frequency and night urination have given way, so that the patient can hold urine five hours and he voids not more than twice at night, and occasionally not at all. For many months the urine was negative except for a few pus cells; when the latter became numerous, an alkaline diuretic caused rapid diminution. Urographic studies and renal function tests were not made.

Neurologic Progress.—Tactile and pain sensation returned to normal; there was no temperature sensation below the nipple line. There was a considerable return of motor activity in the trunk and legs, but the action was not coordinative; the patient could walk with crutches. The leg reflexes interfered with walking. No perspiration occurred below the nipple line. There was normal vibration sensation. Mass reflexes, which were severe in the early period, are now absent except at night.

General Condition.—The patient is in excellent general health. The bowels move regularly with the aid of enemas. The patient is cheerful and optimistic; he goes driving daily, to the theater

twice a week and fishing in the summer. The patient's height has increased 3 inches (7.6 cm.), and his legs have grown in size. He exercises regularly and eats well.

CASE 6.—A woman was injured in the spine by a bullet in 1923. She entered Grace Hospital on Sept. 4, 1926, with total incontinence. There was a history of retention and repeated catheterizations after the injury. She had transient paralysis of

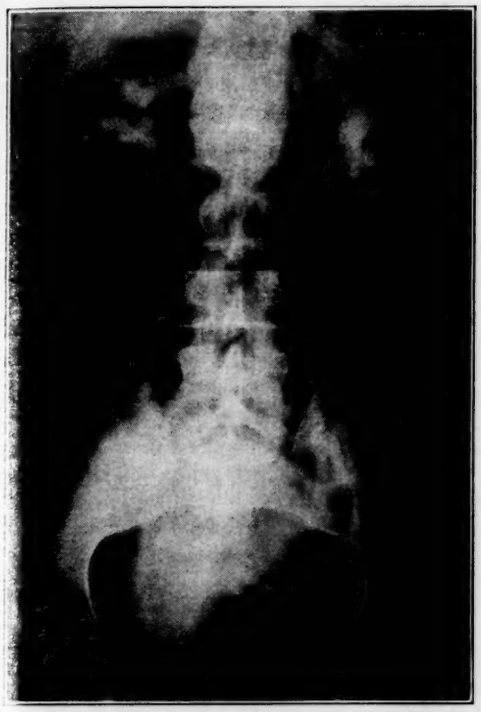

Fig. 6 (case 9).—Complete urogram (taken after the administration of an iodin derivative) during the period of paralysis of the bladder with incontinence. Note the dilatation of the renal pelves and the right ureter. There was delayed function (see fig. 7).

the right leg. Some of the sensory disturbances were persistent. The patient was unable to control the flow of urine. The bowels were constantly sluggish. Cystoscopy disclosed an absence of the right kidney, a large pyelectatic left kidney, complete dilatation (atony) of the left ureter and a contracted, badly infected bladder with dilatation of the sphincter. Catheter drainage of the left kidney pelvis improved the condition. Function, as measured by a dye test, which was negative at the original examination, returned to a fair degree, and the patient regained partial control of her bladder and was able to leave the hospital. She returned two years later with aggravation of all the old symptoms, complete incontinence and a history of chills and fever with pain in the left flank. Renal function was again negative to dye tests, and the amount of urea nitrogen was increasing. In spite of renal pelvic lavage, no improvement occurred, and the nitrogen retention steadily increased. In spite of the transfusions of blood and all supportive treatment, death ensued on Nov. 29, 1928. Examination showed an absence of all portions of the structures of the urinary tract on the right side. During the last weeks of the illness, the bladder sphincter, hitherto relaxed, became tonic and retention occurred; the patient was relieved by catheter because of obvious infection.

CASE 7.—A man, now aged 21, was injured on May 14, 1930, in an automobile accident. He was caught under the steering wheel and was knocked unconscious. On regaining consciousness in the hospital, he was found to be unable to move the legs. There was no sensation of fulness of the bladder or of bowel activity. He entered a hospital in Detroit, wearing an inlying catheter. Films showed fracture of the twelfth dorsal vertebra, with an additional destructive process. He has been under my observation since June 22, 1930, five weeks after the injury. On July 23, neurologic examination showed transverse myelitis at the level of the twelfth dorsal vertebra, with complete paralgesia and an absence of all sensations, and also bladder and rectal paralysis. On admission, the urine was normal and remained so; the bladder was washed daily, and instillations of mild silver protein were given.

Urologic Progress.—Following the determination that the myelitis was permanent, the inlying catheter was removed, and active incontinence promptly developed; it was evident, however, that the bladder was not emptying itself completely, so that a catheter treatment was given daily for some months. This consisted of careful introduction, the draining off of residual urine, irrigation with permanganate solution and the instillation of mild silver protein. The residual urine was found to decrease in amount, and catheterization was discontinued. The patient now voids regularly, timing voidings to correspond with the automatic tendency of the bladder, and aiding the expulsion of urine by abdominal (manual) pressure. During the period when catheter treatments were given, there was occasional evidence of cystitis, in that the urine was found to contain pus. He has had no evidence of ascending infection, lumbar pain or fever. The urine has remained entirely normal since the discontinuance of catheter treatments some months ago, and the patient is active, moving about in a wheel chair; he looks well. Chemical analysis of the blood and elimination tests (renal) gave normal results at all times.

Neurologic Picture.—This was unchanged. Urograms were not taken until recently.

CASE 8.—A girl, now aged 16, was injured by being thrown from a vehicle and was run over by a locomotive on Oct. 21, 1928. She has been under my observation since January, 1930. She had complete motor and sensory paralysis below the zones of the tenth and twelfth thoracic segments. She was catheterized promptly; later, owing to incontinence in spite of periodic catheterization, an inlying catheter was inserted and regular irrigations of the bladder were instituted. This type of drainage and treatment has been in effect ever since. Repeated chemical tests of the blood gave normal results, and phenolsulphonphthalein tests, made every six months, showed

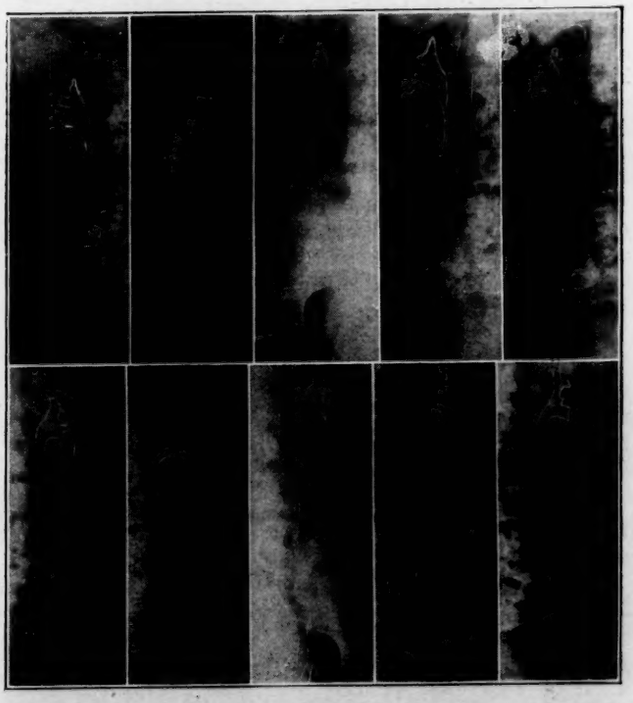

Fig. 7 (case 9).—Serial urograms taken after recovery from paralysis and incontinence. Note the marked improvement in outline and function of the renal pelvis and the ureter. The pictures on the top are of the right kidney; those on the bottom, of the left kidney.

a normal return of dye. In March, 1930, a definite pyuria developed, with evidence of pyelonephritis; it was found that the inlying catheter was not draining well. With replacement of the latter and continued care, together with the use of methenamine in large doses, the pyuria subsided, and had not been of consequence since then. Clinically, the patient has done well and she is up in a wheel chair all day; her bowel

actions are fairly well controlled by mild laxatives and enemas.

Urologic Status.—A serial film study made in April, 1931, showed both renal pelves and ureters to be functioning well, with no conclusive evidence of pyelectasis or ureteral atony. Regular urinalyses to date have shown no abnormal findings. Regular functional tests have given normal results to the present time.

CASE 9.—A man, aged 40, was admitted to Grace Hospital on Aug. 21, 1931. There was a history of meningitis two years previously, which left him paralyzed in the lower extremities. The paralysis had improved until a fall five months before admission, since when he had become progressively worse until, on entrance to the hospital, he was unable to stand or walk. The lower limbs were spastic.

Neurologic Diagnosis.—There were adhesive arachnoiditis and cyst formation at the level of the eleventh dorsal vertebra. The cyst wall was removed, and adhesions around the spinal nerves were separated. Following operation, complete urinary retention occurred. This was overcome in time by abdominal massage, heat and enemas and the bladder emptied periodically, although without the patient's knowledge. He had been unable to urinate voluntarily for eight days prior to operation, after the injection of iodized poppy seed oil 40 per cent into the spinal canal. During this period, also, massage of the abdominal wall with some form of external heat served to empty the bladder periodically. A week after operation, there were marked albuminuria and pyuria. These subsided after the administration of methenamine, which had been given since the operation, was discontinued. A typical automatic bladder developed, but after a few weeks the patient began to notice filling of the bladder, and at this time it was apparently emptying well. During incontinence, a serial study of the urinary tract was made with roentgenograms; these showed bilateral dilatation of the ureters and pelves. There were a slight nitrogen retention and a delay in phenolsulphonphthalein output during the three weeks following operation.

Urologic Status.—Recent tests for renal function have given quite normal results. Recent urograms showed recovery of the kidneys and ureters from the state of dilatation.

Neurologic Status.—The patient made a complete recovery. (This case was reported through the courtesy of Dr. Gurdjian.)

CONCLUSIONS

The increasing frequency of severe accidents with a constant percentage of vesical paralysis and greater accuracy in the diagnosis of nonaccidental lesions of the cord, with the resulting surgical procedures, demand serious consideration of the urinary tract if the best interests of the patients involved are to be served. Observations on the urinary tract made by means of serial x-ray photography together with the usual functional studies and, in some instances, cystoscopic procedures done primarily for therapy indicate the following:

1. Emptying of the bladder can be established following retention due to injury of the spinal cord or to pressure as from a tumor without the use of catheters. Automatic emptying in stubborn cases can be facilitated by use of caudal anesthesia.

2. In the event of infection of the bladder, ascending involvement of the kidneys and ureters is universal, and a large percentage of patients who survive the early effects of a cord lesion succumb to renal infection.

3. In some instances there appears to be a more or less spontaneous recovery from renal infection, but recurrences are frequent.

4. In the presence of gross infection of the urinary tract with a paralyzed bladder, a great deal can be accomplished toward overcoming or curing this infection by means of routine, accepted types of treatment. Prolonged ureteral catheter drainage is particularly efficacious.

5. Hydronephrosis is not a common sequence to paralysis of the bladder nor is ureteral atony a common finding except in the presence of gross infection. It is possible to determine whether such atony is due to infection or is a causative factor in producing infection. Anatomic changes in the bladder are usually those of atony with trabeculations or of marked contracture with thickening of the wall of the bladder. The internal sphincter is regularly dilated and presumably inactive soon after the onset of paralysis; it regains tone in periods of recovery.

PYELOSCOPIC AND UROGRAPHIC STUDY BEFORE AND AFTER RENAL SYMPATHECTOMY

WILLIAM P. HERBST, M.D.
WASHINGTON, D. C.

Renal sympathectomy on a human being was first done by Papin [1] about 1921 for nephralgia and small painful hydronephrosis. Since that time many case reports have appeared in the literature throughout the world. The indications for this procedure are many, including reflex anuria,[2] nephraglia,[1] early tuberculosis of the kidney,[2] prevention of reformation of renal calculi,[2] certain types of nephritis,[3] acute hypertension,[2] renal sympathicotonia,[3a] painful hyperdynamic motility of the renal pelvis and painful nephroptosis.[4]

Most of these indications deal with relief of pain. The question arises as to whether the relief is due to interference with the pain-conducting nerve fibers or to a change in the mechanism of the motility of the renal pelvis. If motility changes occur, is satisfactory renal drainage interfered with? Do definite clinical entities in the form of painful abnormal motility syndromes exist which may form the basis for a more accurate indication for surgical procedures involving the nerve supply to the upper urinary tract? How long do the effects on motility continue?

Urographic studies before and after sympathectomy have been done by Hess, many of which I have seen and found to be rich in information. Unfortunately, pyeloscopy (fluoroscopic visualization of the upper urinary tract) is a time-consuming method of investigation because of the time necessary to obtain satisfactory accommodation of the eyes and the necessary cooperation of the roentgenologist or technician. This method is an excellent means of studying the motility mechanisms, for one can see them as they occur.

The Jarre Cinex camera, which Cumming and Jarre have used to demonstrate the dynamic physiology of the upper urinary tract, is a wonderful piece of mechanism which enables one not only to perform pyeloscopy but to take as many as four urograms in one second, thus making a permanent record of the various phases of motility. Unfortunately, not every urologist can have a mechanism such as this at his disposal or a person as interested in upper urinary tract motility as Jarre.

Read before the Section on Urology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

1. Papin, E., and Ambard, L.: Resection of the Nerves of the Kidney for Nephralgia and Small Hydronephrosis, J. Urol. **11**: 337 (April) 1924.
2. Milliken, L. F.: Theoretical Indications for Renal Sympathectomy, Pennsylvania M. J. **33**: 738 (Aug.) 1930.
3. (*a*) Harris, S. Harry, and Harris, Richard G. S.: Renal Sympatheticotonus, Brit. J. Urol. **24**: 367 (Dec.) 1930. (*b*) Simons, Irving: The Surgical Treatment of Nephritis, J. Urol. **27**: 399, 1932. (*c*) Milliken (footnote 2).
4. Hess, Elmer: Renal Sympathectomy, J. Urol. **20**: 333 (Sept.) 1928.

For the past three years I have been using pyeloscopy and have recognized different motility mechanisms. The syndrome renal sympathicotonia, as described by the Harrises, I have found to be a definite clinical

Fig. 1.—Serial urograms taken in rapid succession. Spasm in ureteropelvic region constant.

entity. A syndrome characterized by extreme, generalized pelvic overdynamic activity has been recognized, and a number of patients with painful nephroptosis have been studied.

Renal sympathicotonia, as described by the Harrises, is characterized by: (1) positive reproduction of the type of pain complained of by the patient on distention of the renal pelvis; (2) pyeloscopic demonstration of definitely decreased motility in any of the calices or the entire pelvis; (3) delayed emptying time of the individual calices or pelvis; (4) recurrence of pain after its temporary relief by means of physostigmine; (5) evidence of generalized sympathicotonia, which may be most marked on the side of the lesion; (6) negative urinary observations on microscopic and cultural examination, and (7) the proved absence of organic ureteral stricture. Twenty-eight cases are reported cured by renal sympathectomy.

In the patients that I have seen the condition has been satisfactorily controlled by physostigmine and they have had no reason to submit to sympathectomy. The first one I saw over three years ago, and the history is as follows:

REPORT OF CASES

CASE 1.—A girl, 19 years old, a student, examined in February, 1929, complained of disabling left renal pain. A pyelogram demonstrated early pyelectasis and ureteropelvic spasm without ptosis. The pain was reproduced in exaggerated form on distention of the pelvis, and she experienced no relief following ureteral dilation, which was done twice. A pyeloscopy was done March 15; the calices were seen to be definitely dynamic, and difficulty was experienced in filling the lower one. The ureteropelvic junction was in a state of spasm and the pelvis could be seen to contract sometimes without forcing any of the medium through. The ureteral streak, when it did appear, progressed normally to the bladder without any obstruction. Four serial urograms at this time (fig. 1) demonstrated the persistent spasm as shown, and the pelvis had failed to empty at the end of fifteen minutes' observation. These observations took place before the Harrises reported their work, so that the condition was not recognized as renal sympathicotonia.

Because of the persistent spasm at the ureteropelvic junction, an exploration was done in April, 1929, to ligate an anomalous vessel if any should be present. The kidney appeared normal and no anomalous vessel was demonstrated. A decapsulation was done because nothing else suggested itself at that time as being of any value. The patient experienced no relief from her attacks of pain. On May 4, 1931, after I had corresponded with her and instructed her to take physostigmine, I received a letter stating that she had been relieved of the pain for the first time.

CASES 2 and 3.—These two cases of renal sympathicotonia have been satisfactorily controlled by physostigmine. Figure 2 demonstrates how completely the calices can be isolated by spasm.

CASE 4.—This patient, examined on Aug. 29, 1931, had bilateral nephroptosis with pain on the left side only. She could not be relieved by wearing a belt because the extreme disproportion between the chest and hip diameters made the operation of the belt corset unsatisfactory when attempted. Pyeloscopy on the right side demonstrated satisfactory emptying in both the prone and upright positions, but on the left side, in the upright position, the pelvic contractions succeeded only now and then in forcing the contents through the ureteropelvic angulation. In the prone position the left side emptied normally. The pain of which the patient complained was reproduced by distention of the pelvis. A sympathectomy was done (Jan. 4, 1932) on the left side with no attempt at nephropexy, following the technic of Hess. She was relieved of her discomfort, and an intravenous urographic checkup on April 12 demonstrated the pelvis to be a little flaccid in appearance and higher than before operation, and the ureter free from any angulation (fig. 3).

CASE 5.—This case is one of unusual interest in that it has a different mechanism than any described. A 19 year old youth, with a complaint of severe right renal pain caused by any physical exertion, was seen the first time July 21, 1930. Failure

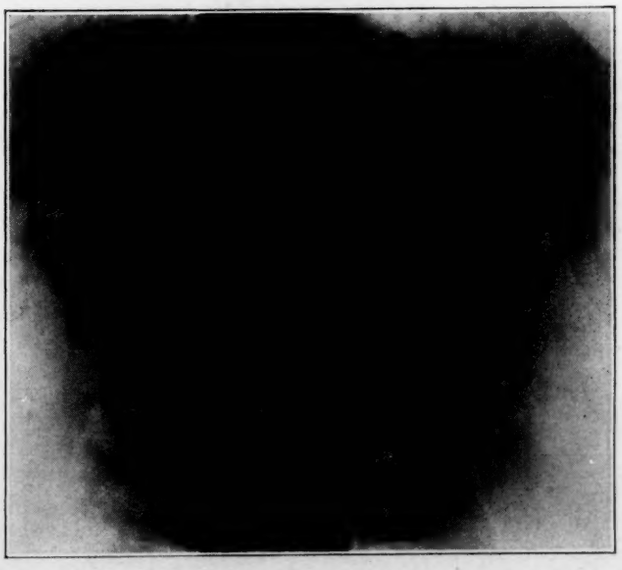

Fig. 2.—Upper calix retains medium as securely as though it were tied with a ligature.

of rotation of the colon with spasm was controlled by a dietary regimen. Pyelography at the time of the first cystoscopy demonstrated difficulty in filling the minor calices because of spasm. There was marked complaint of pain similar to the type complained of as soon as an injection was made into the pelvis. Ureteral dilation failed to relieve the pain. Pyeloscopy about a

year later demonstrated extreme overdynamic pelvic activity to such an extent that the best filling, even under direct fluoroscopic control, resulted in the pyelogram shown in figure 4. Physostigmine, belladonna, bromides, acetylsalicylic acid and phenobarbital failed to give relief. I therefore advised renal sympathectomy, which the patient readily accepted because he

Fig. 3.—Preoperative bilateral excretion urogram which demonstrates poorer drainage on the left side.

was unable to work. At operation, August 17, a high-lying kidney made exposure difficult. The technic of Hess was used, so no type of fixation was done. There was complete relief from symptoms. The check-up pyeloscopy done three months later (fig. 5) demonstrated a slower mechanism than the average normal and a delayed emptying time, as the pelvis failed to empty during fifteen minutes' observation. (Note the fully filled calices in figure 5 in marked contrast to those in figure 4.) An intravenous urogram made six months after operation (Feb. 25, 1932) demonstrated the same picture. An intravenous roentgenogram eight months after operation (April 12) (fig. 6) demonstrated a slight return of the original dynamic state, as evidenced by the tonic condition of the minor calices in comparison with the previous urograms. A report from the patient on April 18 was to the effect that he was still entirely free from any discomfort.

COMMENT

The technic of renal sympathectomy varies, and results may vary according to the technic employed. Papin first described his technic as one in which magnifying glasses were used to identify the small nerve fibers surrounding the renal vessels so that a complete sympathectomy could be done. Hess told me that Papin now cuts only the one large bundle of nerves which run along the superior margin of the pedicle and in addition does a decapsulation, nephrostomy and nephropexy. Hess carefully strips all the nerves seen with the naked eye around the pedicle vessels and in the areolar tissues. He also frees the ureter from its peritoneal bed attachments down to the bony pelvis, so that ureterolysis is accomplished. The periureteral fibrous sheath is not stripped. It has been found necessary to remove the kidney because the ureter became atrophied and obliterated following too complete stripping of its sheath. Hess does no type of nephropexy. He showed me a number of check-up pyelograms which demonstrated the kidney to be as high as or higher than it was before operation.

Major Kimbrough,[5] has done several hundred sympathectomies. He does a moderately complete stripping of the vascular pedicle and removes all the nerve-containing areolar tissue about and between the renal vessels. He also does a ureterolysis like Hess, plus a modified Billinger or Deming type of nephropexy, and is pleased with his results. In my operations I have followed the Hess technic. Since the nerve supply to the kidney consists of a composite plexus having its source from the splanchnics, vagus and lumbar nerves, it would seem that this operation should be called neurectomy instead of sympathectomy.

It is significant that Kidd, Kimbrough and others who advocate nephropexy in selected painful nephroptoses stress sympathectomy as an important step in their surgical technic and are well pleased with their results. It is also significant that others who are satisfied with their results in nephropexy employ a technic by which, because of its thoroughness of mobilization of the kidney and ureter, they unwittingly perform a sympathectomy of varying degrees of completeness. Those who are not satisfied with the results of nephropexy in properly selected cases do not effect a sufficiently complete mobilization of the kidney to accomplish interference with the renal nerve supply.

I state this because of personal observation of numerous technics with comparison of results. I do not wish to leave the impression, however, that relief of mechanical obstruction or extreme torsion or traction of the renal pedicle and its nerves may not in itself relieve pain in many cases. It does seem highly probable that pain may be the result of deranged mechanisms

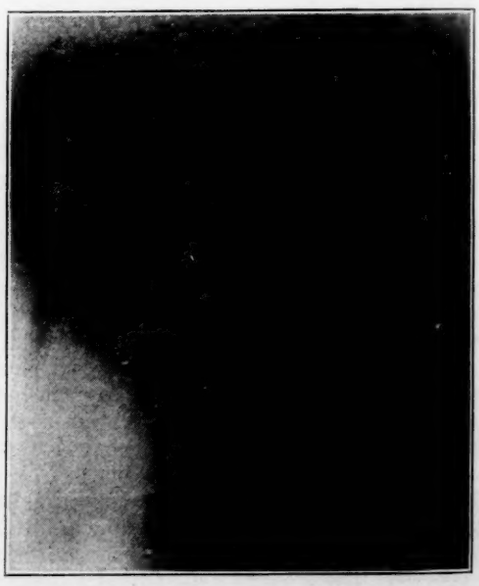

Fig. 4.—Best filling possible under direct fluoroscopic control (preoperative).

of the upper urinary tract. Renal sympathicotonia is one and painful hyperdynamic motility (case 5) is another. The presence of these abnormal motility syndromes can be recognized best by pyeloscopy.

5. Kimbrough, J. C.: Personal communication to the author.

Hess's check-up pyelograms demonstrate that some adynamic-appearing renal pelves appear more tonic and active following sympathectomy, and that some spastic dynamic-appearing pelves appear to be more flaccid and relaxed. The duration of these changes is still problematic. The level of the kidney was usually

Fig. 5.—Satisfactory filling three months after renal sympathectomy.

as high as or higher than before sympathectomy, usually with straight ureters.

With all the evidence at hand, one knows that the motility following sympathectomy is changed, but one does not know whether it is this change in the mechanism or the interference with the pain-conducting paths that is responsible for the relief from pain. In the last case described, the extreme overdynamic mechanism which existed before operation was at first radically changed and now seems to be reestablishing itself as nerve regeneration takes place, beginning eight months after operation.

Renal sympathectomy appears to be a safe procedure as far as any serious interference with adequate drainage of the pelvis is concerned, but it would be reassuring to have more follow-up pyeloscopy and pyelography for additional proof.

I hope that many will become interested in studies of motility inasmuch as recognition of pain-producing abnormal motility syndromes is practicable and will make the classification of renal pain-producing conditions more accurate.

1726 Eye Street, Northwest.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CUMMING AND HERBST

DR. H. W. E. WALTHER, New Orleans: I have had no personal experience with the operation, but the advocates of renal sympathectomy paint a rather roseate picture of the results achieved. I cannot but feel that for some time it must remain in the same unenviable position that nephropexy now occupies. If, in these cases, the operator is doing sympathectomy, decapsulation and suspension of the painful kidney, is he justified in giving all the credit for results to the first procedure alone? If so, why do the other two? I fear that the investigations of Blatt, who proved experimentally that sympathectomy of the kidney and ureter inevitably lead to a hydronephrosis and a hydro-ureter, have been ignored unduly. Hess, I understand, frees the ureter but avoids the periureteral fibrous sheath. In the presence of advanced periurethral inflammatory adhesions, this nicety in technic would hardly be possible. Dr. Herbst's experiences with physostigmine (eserine) in nephralgia afford one more aid in handling these patients conservatively. Those that have employed follow-up pyelograms note spastic, flaccid and relaxed pelves. Might not such a state encourage stasis of the upper urinary tract with its attendant ills? Damage to organs by sympathectomy—if actual damage occurs—cannot be remedied. Therefore, are the ultimate results of sympathectomy reassuring? More water will have to flow under the bridge before one is ready to dogmatize. Dr. Herbst's plea for further postoperative studies by means of urography should do much to clear up obscure points. I feel hardly qualified to discuss Dr. Cumming's contribution. His observations on the bladder, ureter and kidney changes in cord lesions are decidedly an advance in the conception of these ailments. Serial roentgenograms with the Cinex camera, as perfected by Cumming and Jarre, now permit the study of the dynamic physiology of the upper urinary tract as never before. His use of a caudal anesthesia in establishing vesical overflow is most interesting. By the rank and file of the profession, cord diseases or injuries are considered hopeless from the start, and the feeling abounds that the less done here the better. Whether to catheterize, drain suprapubically or ignore completely cases of bladder paralysis still puzzles many. Suprapubic cystotomy has been my procedure of choice in cord bladders with retention. I have observed uniformly that the patients are more comfortable and live longer when this operation is done early. The after-care is as important as the

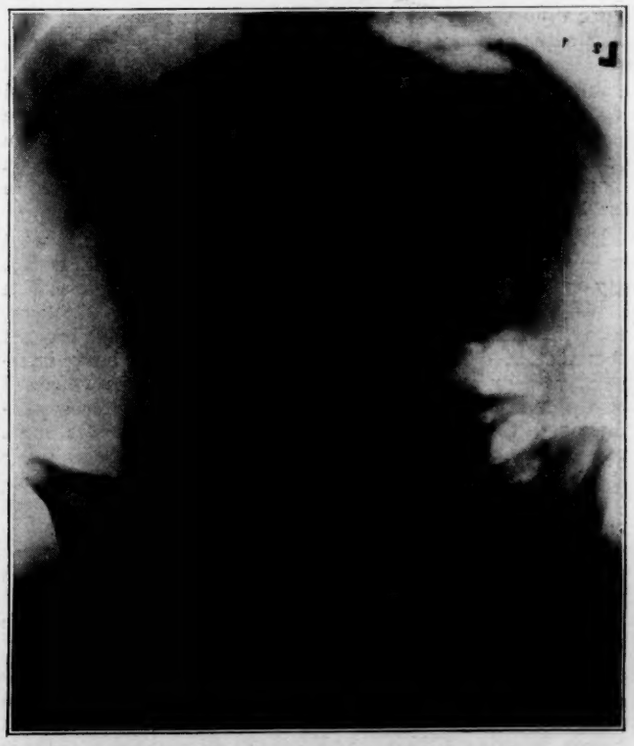

Fig. 6.—Beginning return of hyperdynamic motility eight months after renal sympathectomy.

cystotomy. Periodic urine examinations, chemical studies of the blood, renal function tests, daily vesical lavage and cystoscopic check-ups are obviously imperative if the patient is to be kept in the best possible condition.

DR. H. K. SANGREE, Philadelphia: Dr. Milliken has probably done more research work on sympathectomies than any

other man using dogs. Three years ago Dr. Hess, Dr. Milliken and I reported this work in Erie at the meeting of the Pennsylvania State Society, and Dr. Hess tells me he has had many of these cases. I have been thinking of the patients we have had under observation and have operated on. We have used sodium iodide and also skiodan, which gives a much better picture than iopax and other agents that are used. One patient under observation has been operated on twice and I think will be a case for sympathectomy.

DR. M. L. BOYD, Atlanta, Ga.: Will infection of the bladder take place without catheterization? Data to answer that question are insufficient, but it is known that: 1. Injured tissues of the urinary tract are susceptible of infection and injured bladder tissue is being dealt with. 2. Retention of urine predisposes to infection, and there is an enormous retention for periods varying usually from three to six weeks unless prevented by some intervention from without. 3. In more or less normal people even mild disturbances of the gastro-intestinal tract often result in the passage of bacteria into the blood stream and to kidneys, and in these cases marked intestinal disturbances occur from which one would certainly expect the bacilli to enter the blood stream. Infection of a paralyzed bladder without drainage, particularly when the resistance of the infected tissue is lowered, is a more or less serious condition. Catheterization is not the proper treatment during the early period for the retention in males, for infection of the bladder by catheterization is certain, and traumatism of the prostatic urethra by the catheter along with the infection usually produces a rather severe posterior urethritis, and often an epipidymitis for the reason that there is a spastic closure of the internal sphincter sealing the products of the inflammation and infection within the posterior urethra. A retention catheter in males is particularly harmful, while in suprapubic cystotomy the urethra is not injured, nor is the bladder injured by the pressure of the suprapubic tube. My advocacy of suprapubic cystotomy is based on these facts. By cystotomy the bladder will surely be infected, but with continuous and adequate drainage my cases have shown that such an infection is only superficial and of almost no moment; there is no backpressure on the kidneys, no injury of the urethra, and no inflammatory changes in the bladder that will cause ureteral obstruction. And of no little importance is the fact that the patient is given the best chance to recover from the infection or injury which caused the spinal cord injury and which in some of the cases I have seen was sufficient alone to threaten the life of the patient.

DR. WILLIAM P. HERBST, JR., Minneapolis: I do not want to be understood as advocating wholesale renal sympathectomy. My main purpose in the paper was to give what information I had obtained so far both before and after sympathectomy, with the idea of meeting the criticism Dr. Walther brought out: that is, drainage of the upper urinary tract being interfered with by sympathectomy. I think the pictures I showed of the last case demonstrated that immediately after sympathectomy, that is, after six months, the kidney was more relaxed than it was before, but at eight months it had already started to resume its activity, indicating, I believe, a regeneration of the nerve supply to the kidney, which has already been proved by work on animals by Milliken and others. I again wish to plead for studies by the use of pyeloscopy, which is one of the best means at hand for the study of dynamic physiology.

DR. R. E. CUMMING, Detroit: I should like to have heard Dr. Herbst more fully on his subject. I have had considerable success in relieving the type of patients he has discussed, by the use of physostigmine. I am sorry Dr. Boyd did not mention the possibility of nephrostomy for relief in some types of kidney infection I have under consideration; it may offer a good deal, particularly in that sort of case illustrated by one patient in whom massive bilateral renal calculi have developed, in spite of good care of the bladder. Spontaneous infection through the urethra is more apt to occur in the female than in the male, so that an inlying catheter or cystostomy drainage has proved the best means of treatment in the female after infection has developed. In the male, inlying catheter treatment is especially deadly, its danger secondary only to repeated catheterizations. In spite of Dr. Hinman's work, there are cases in the series with paralysis up to fifteen years in duration with an extremely low incidence of hydronephrosis. I have been able to keep the sickest patient, paralyzed from the waist line downward for more than seven years, with severe bilateral renal infection, in such good condition that she enjoys life to a great degree.

SODIUM MORRHUATE FOR TREATMENT OF VARICOSE VEINS

FREDERICK L. SMITH, M.D.
ROCHESTER, MINN.

Chemical substances were first introduced into blood vessels to produce localized thrombosis by Pravaz, in 1851, in his attempt to cure aneurysm by injections of ferric chloride. For the next seventy years, efforts were made to extend the method to treatment of other conditions and to introduce various solutions, but for one reason or another the several proposals were rejected by most members of the medical profession. Roughly five years ago, injection treatment of varicose veins became so generally accepted in the United States as to displace surgery. It was recognized, nevertheless, that an ideal sclerosing solution had not been obtained. Finally Wright, and other English surgeons, reported excellent results with sodium morrhuate, and it is largely because their introduction of this solution has made it possible for me to give what I believe will be my final opinion as to comparative merits of the various solutions, that this report has been written. I am not aware of any one having used sodium morrhuate in this country before it was used at the Mayo Clinic in October, 1930. As far as I know, the only report from

Fig. 1.—Jugular vein of rabbit forty-eight hours after injection of sodium morrhuate. Infiltration of inflammatory elements and destruction of wall of vein are already evident.

From the Section on Postoperative Care, the Mayo Clinic.

the United States, other than the present one, in which results following use of this substance in a large number of cases has been recorded, is that of Tunick and Nach.[1] Figures 1, 2, 3 and 4 illustrate these results.

Fig. 2.—Jugular vein of rabbit ninety-six hours after injection of sodium morrhuate. Infiltration and destruction are much more evident.

Fig. 3.—Varicose veins of right knee before injection of sodium morrhuate.

Quinine 12 per cent, and urethane (ethyl carbamate) 6 per cent, Genevrier's solution, produces a firm thrombosis, with a moderate amount of chemical venitis, within twenty-four hours. The substance should be administered in a dose of 0.5 cc. the first day, and if no idiosyncrasy is present, or if local reaction is not unduly severe, it can be used daily in doses of from 2 to 4 cc. This solution does not cause pain when introduced into the vein, but it does produce, in some persons, distressing constitutional symptoms, such as weakness, rapid pulse, profuse sweating, vertigo, a burning sensation in the throat, and abdominal cramps. The general picture is that of shock. The treatment is the same as that for ordinary fainting, and the patient usually revives sufficiently to leave the treatment room in from five to ten minutes.

Dextrose 50 per cent and sodium chloride 30 per cent, in equal parts, is a very satisfactory solution. The dose ranges from 5 to 50 cc., but I have never used more than 15 cc. at a time, believing that a moderate dose is less likely to produce general complications. The patient will experience cramps, varying from very slight to moderately severe, which may last from two to five minutes. Both quinine and urethane, and dextrose and sodium chloride will produce necrosis of tissue in varying degrees if injected into the extravascular tissues.

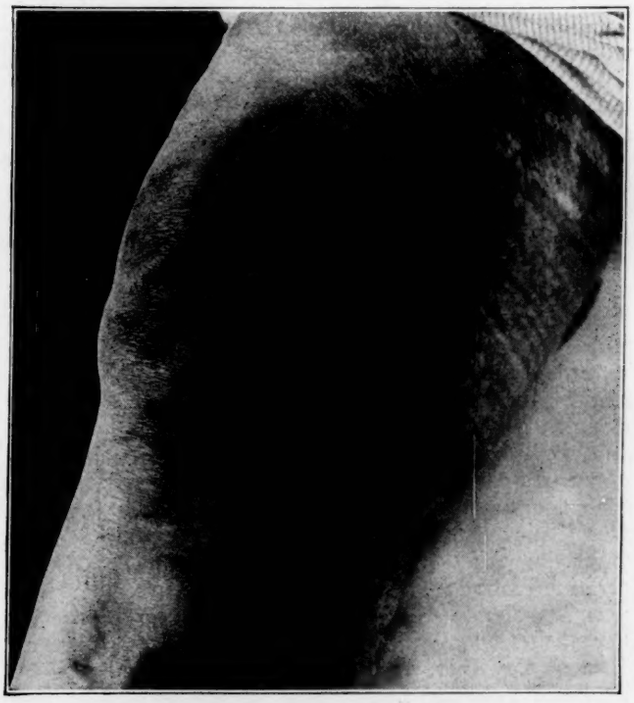

Fig. 4.—Same knee as that illustrated in figure 3, twenty-four hours after injection of sodium morrhuate.

Sodium morrhuate has marked advantages over these solutions. It is a stable sclerosing solution. The 3 per cent solution can be safely used in stellate or "spider-burst" veins, without the least fear of necrosis. The usual strength of the solution for the general run of varicosities is 5 per cent, in doses of 2 to 10 cc., but I rarely use more than 4 cc., occasionally 6 cc. For very obstinate varicose veins the 10 per cent solution can be used in doses of from 2 to 8 cc. This solution causes no general systemic reaction. Locally, the chemical venitis compares with that of quinine. There are no cramps, and the patient experiences no discomfort during the treatment, except possibly momentary burning. If injected into the tissues, slough rarely occurs; I myself have made 4,000 or more injections, and it is

1. Tunick, I. S., and Nach, Robert: Sodium Morrhuate as a Sclerosing Agent in the Treatment of Varicose Veins, Ann. Surg. **95**: 734-737 (May) 1932.

unlikely that in this large number of injections I have entirely avoided getting any of the solution outside the vein. Nevertheless, I have observed sloughing in only three cases, in all of which the varicosities were of the stellate type, and in all of which a 5 per cent solution was used. Only the skin was involved, and healing was prompt. On account of its satisfactory sclerosing qualities, sodium morrhuate has become my solution of choice.

ADHESIONS OF THE ANTERIOR SURFACE OF THE LIVER

ARTHUR H. CURTIS, M.D.
CHICAGO

It has long been my custom to make a thorough survey of the abdominal contents whenever the abdomen is opened by free incision. Despite this routine procedure, it was not until approximately five years ago that I became aware of the frequent incidence of adhesions of the anterior surface of the liver in patients with gonorrheal disease of the fallopian tubes.

In 1930 [1] I recorded having encountered more than a dozen instances of liver-abdominal wall, "violin-string" adhesions in patients with coincident residual gonococcal tubal disease. It was characteristic of the adhesions in those cases that they were limited to the anterior surface of the liver; the remainder of the upper part of the abdomen tended to remain free.

During the two years that have elapsed since my earlier report, an accurate record has been kept of the intra-abdominal status of all patients subjected to abdominal operation. In this more recent period there have been twelve additional patients with adhesions of the anterior surface of the liver whose cases I would describe as typical, and in all of these cases coincident study of the pelvic viscera has revealed residual evidence of gonorrheal disease. Three other patients with typical adhesions of the anterior surface of the liver were believed to have had gonorrheal infection of the tubes, but the evidence was not sufficient to warrant a positive diagnosis. In another patient, in whom there was indubitable evidence of gonorrheal disease of the tubes, there were slight adhesions of the anterior surface of the liver, such as would ordinarily be passed by without comment.

One patient with two bands of adhesions in a typical location was free from suspicion of genital infection; this girl, a virgin of 18 years, suffered from intense dysmenorrhea incident to a kinked, markedly enlarged, chronically inflamed appendix and a badly retrodisplaced, dragging uterus. Evidence of chronic inflammation of the peritoneal covering of the ascending colon, extending upward for several inches from the region of the appendix, suggested that the etiology of the adhesions of the liver in this case was a former attack of appendicitis.

Among other cases that have been encountered are eight in which there were atypical lesions, as follows: a patient with bilateral hydrosalpinx and adhesions just below the margin of the liver between the anterior abdominal wall, the omentum and the colon; a patient with a history of severe salpingitis as a younger woman, in whom operation revealed slight perisalpingitis and one band of adhesions of the liver between the anterior surface of the liver and the abdominal wall; a patient whose tubes had previously been removed, in whom banded adhesions were found between the surface of the right lobe of the liver and the lateral abdominal wall; a patient with adenocarcinoma of the body of the uterus, without history or evidence of gonorrheal disease, in whom there were two thin, brushlike strands of adhesions of the anterior surface of the liver; a patient with bilateral hydrosalpinx and exceedingly firm pelvic adhesions, all presumably resultant from infection incident to a ruptured appendix, in whom were encountered firm adhesions of the entire right side of the abdomen, including firm adhesions of varied character over the anterior surface of the liver; a patient with multiple uterine fibroids, no evidence of pelvic infection and a gallbladder packed with immense stones, in whom there was a firm mass of adhesions high up on the anterior surface of the liver, almost at the attachment to the diaphragm; a patient with nodular, caseous, tuberculous tubes; the abdomen was otherwise entirely normal, except for a firm mat of adhesions of the liver-abdominal wall over almost the entire anterior and right areas of the parietal surface of the right lobe of the liver.

To my list of cases of adhesions should be added those of two patients who were not operated on, both of whom had acute gonorrheal salpingitis; both suffered from excruciating "liver pain," without discoverable evidence of disease of the gallbladder or right-sided pleurisy. George Irwin of Kankakee, Ill., tells of another case, that of a young woman with acute gonorrheal pelvic inflammation, who, during the second week of illness, suffered with severe pain and tenderness in the right upper quadrant, the pain being aggravated by diaphragmatic excursion.

Floyd Keene, in a recent clinic before his students, during an operation on a patient with chronic gonorrheal salpingitis, mentioned interest of my associates and myself in the occurrence of adhesions of the liver in such cases; on intra-abdominal palpation over the anterior surface of the liver of his patient, he found typical violin-string adhesions.

As previously described,[1] adhesions of the anterior surface of the liver are typically "violin-string" adhesions between the parietal surface of the liver and the adjacent anterior abdominal wall and diaphragm. The adhesions usually occupy an area many inches in diameter, are ordinarily numerous and are of sufficient length to allow considerable play between the liver and the parietal peritoneum.

A quotation from my earlier paper on this subject appears pertinent: "It is self-evident that pelvic infection of other etiology, or in fact any peritoneal infection, may produce exactly similar adhesions; for some unknown reason, however, adhesion bands as described appear to be characteristically indicative of gonococcal infection." The infrequent incidence of these adhesions in other diseases has been surprising. One would, for example, expect to find them often in patients with cholecystitis, yet only one patient among a large number with disease of the gallbladder had violin-string adhesions on the anterior (parietal) surface of the liver.

Wassermann tests are made as a routine measure on all of our patients. Strangely enough, syphilis, which has been suggested by others as a probable cause of these adhesions, has not been present in a single one of my cases.

From the Passavant Memorial Hospital and the Department of Obstetrics and Gynecology, Northwestern University Medical School.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

1. Curtis, Arthur H.: A Cause of Adhesions in the Right Upper Quadrant, J. A. M. A. **94**: 1221 (April 19) 1930.

CLINICAL CHARACTERISTICS

Patients with old-fashioned "liver pain" may owe their distress to adhesions of gonococcal origin. In a woman without evidence of disease of the gallbladder or pleurisy, right-sided pain in the region of the liver should arouse suspicion of a gonorrheal pelvic infection. The pain in the right upper quadrant incident

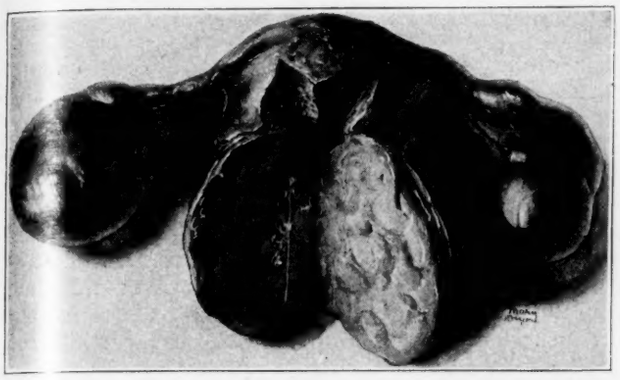

Fig. 1.—Bilateral hydrosalpinx of gonorrheal origin and fibromyoma of the uterus, removed from a patient with typical violin-string adhesions between the anterior surface of the liver and the adjacent abdominal wall and diaphragm.

to violin-string adhesions is sometimes slight, similar to a stitch in the side, but quite often it simulates a more serious attack of pleurisy. Many patients with gonorrheal salpingitis, in response to inquiry, state, "Yes, I had pleurisy in the right side of my chest at the time I first had trouble with my tubes."

One patient, who was hospitalized because of the severity of her salpingitis, complained most bitterly of right-sided pain in the region of her liver. She scarcely dared to draw breath and cried out because of the cutting character of the pain. A rub could be heard over the liver during respiration; this was difficult to differentiate from a rough pleural friction rub. A similar attack of pain in the region of the liver recurred approximately a year later. Eventual operation, resorted to because the patient persisted in repeatedly subjecting herself to genital reinfection, revealed interesting pathologic changes. In the pelvis were typical "ram's horn," chronically diseased fallopian tubes, with greatly thickened walls which bespoke recurrent infection. Between the anterior surface of the liver and the adjacent abdominal wall and diaphragm were innumerable violin-string bands and sheets of adhesions.

Apparently, these adhesions develop chiefly during acute attacks of pelvic infection. This at least is true if one may judge from the symptoms of the patients.

Violin-string adhesions are not a serious item from the point of view of danger, recurrence of infection or chronic suffering. After disappearance of the early symptoms, which vary enormously from mild to severe, there is seldom notable persistence of discomfort, nor is there recurrence of pain unless the patient is so unfortunate as to develop a fresh pelvic infection. In view of the self-limited character of the symptoms, it would appear that little is to be gained from breaking up the adhesions at the time of operation.

The manner of extension of the infection from the pelvis to the peritoneal surface of the liver is problematic. It may be along the peritoneal surface of the ascending colon; or it is possible that gonorrheal disease produces generalized peritoneal infection, beyond the confines of the pelvis, more frequently than has heretofore been assumed.

SUMMARY

Within the past five years more than two dozen patients subjected to abdominal operation have been found to have coincident gonorrheal disease of the tubes and typical violin-string adhesions of the anterior surface of the liver. Half a dozen somewhat similar atypical cases, likewise apparently of gonorrheal origin, have been observed at operation.

At least four other patients, none of whom was subjected to operation, had palpable evidence of gonorrheal disease of the tubes and suffered from localized pain in the region of the liver almost pathognomonic of adhesions of the anterior surface of the liver.

It is to be assumed that other peritoneal infections may produce exactly similar adhesions, but thus far only isolated cases have been encountered, and in practically all instances the adhesions in these cases have been atypical and have also been present elsewhere in the upper part of the abdomen.

CONCLUSIONS

1. Adhesions of the anterior surface of the liver are a not infrequent complication of gonorrheal disease of the fallopian tubes.
2. These adhesions apparently develop during the acute stage of the pelvic infection.
3. The differential diagnosis of pain in the right upper quadrant of the abdomen in women should include consideration of adhesions of the anterior surface of the liver. If the cause of the pain in the right upper quadrant is difficult to determine, a pelvic examination may serve to differentiate.

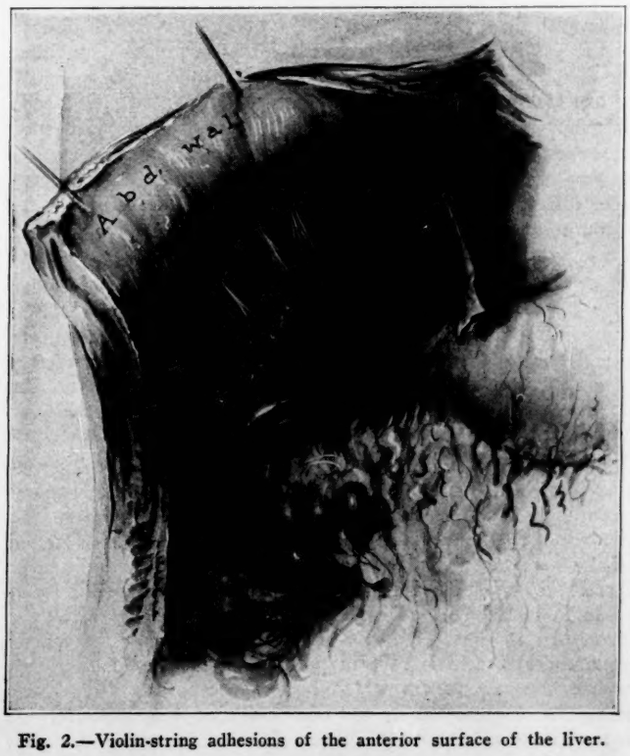

Fig. 2.—Violin-string adhesions of the anterior surface of the liver.

4. Conversely, in the presence of a pelvic inflammatory mass of unknown etiology, a history of pain in the right upper quadrant, in the region of the liver, may be of material moment in the differential diagnosis of the etiology of the pelvic lesion.

104 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. HILLIARD E. MILLER, New Orleans: Since Dr. Curtis first called attention to the possible coexistence of gonorrheal salpingitis and subphrenic adhesions, I have been deeply interested in the subject. While I have not made it a routine practice to search for this pathologic change, I have in some twelve or fifteen instances noted the presence of subphrenic adhesions when the pelvis was involved by gonorrheal infection. The extension of the infection from the pelvis to the subdiaphragmatic spaces may be by one of three general routes: the paracolic groove of the ascending colon, the retroperitoneal lymphatics, and the portal veins. It would appear that the first named group was the most likely route of extension. On several occasions the abdomen has been opened before complete cooling of the gonorrheal process had occurred, and on all such occasions, considerable peritoneal fluid was present and granular exudate, agglutinating several coils of the intestine, was found as high up as the level of the umbilicus. Coffey has shown that the kidney region, with the patient lying in a horizontal position, is the lowest plane of the abdominal cavity, and that it is necessary to elevate the body to an angle of 70 degrees in order to drain fluids that have collected in this region to the pelvic cavity. From his conclusions, it is quite simple to explain the occurrence of subphrenic infections and adhesions by the gravitation of infected secretions to the subphrenic spaces. It is difficult, however, to explain the infrequent occurrence of subphrenic abscesses, when the existence of adhesions indicates that a more or less generalized peritonial involvement was present, unless one explains it on the basis that the peritoneum is able to attenuate the strain of the organism and establish an immunity to the infection. In a search of the literature, only one reference was found to pelvic infections as a contributing cause of subphrenic abscesses. This reference was made by Perry, who in an analysis of 496 cases of subphrenic abscess found a 1.3 per cent incidence of causation from pathologic changes in the pelvis. I have noted in several instances, in the acute phases of gonorrheal disease of the pelvis, that patients complain of liver pains simulating the discomfort which is more or less characteristic of pleurisy. In one instance the pain in this region was the most pronounced symptom and necessitated immobilization of the chest with adhesive straps for relief. In cases in which liver pain was a symptom, the presence of adhesions showed later, at operation, that a definite inflammatory process had been present to account for the discomfort.

DR. J. P. PRATT, Detroit: Since salpingitis is usually bilateral, it would be logical to assume that if adhesions occur over the liver as a consequence of salpingitis there should be a similar occurrence in the region of the spleen. In my experience this assumption is in accord with the facts as determined by operation. I should like to ask Dr. Curtis whether he has found adhesions with the same frequency over the liver and spleen.

DR. ARTHUR H. CURTIS, Chicago: Although it is my routine practice to make a thorough examination of the abdominal viscera, I do not regularly include palpation of the spleen and the adjacent tissues because that would necessitate introduction of the arm far above the elbow. Therefore I cannot answer Dr. Pratt's question relative to whether there are splenic adhesions in addition to adhesions on the anterior surface of the liver. In response to Dr. Miller: I believe that subphrenic gonorrheal abscess is rare in these cases despite the fact that among the few papers which have appeared on this subject, since I first presented it, was one concerned with a gonorrheal abscess overlying the liver. I am disposed to believe that that case was a rare one. I would emphasize once more that it is characteristic of these gonorrheal adhesions that they are limited to the anterior surface of the liver; the remainder of the abdomen (with the exception of the pelvis) tends to remain free. In the few instances in which adhesions ascribable to other infections have been encountered, they have been atypical and have also been present elsewhere in the upper part of the abdomen.

GENERAL CRITERIA FOR THE DIAGNOSIS OF BRAIN TUMOR

GENERAL SYMPTOMS

MICHAEL OSNATO, M.D.
NEW YORK

This paper is a plea for the early diagnosis of brain tumors. The increasingly gratifying end-results of neurosurgery in cranial neoplasms are due not only to perfection of their technic but to the courage and ingenuity of neurosurgeons. The responsibility for still more satisfactory results rests, however, on the medical neurologist and the practitioner of medicine in other fields. Too often even the neurologist delays recognition of a cerebral growth far beyond the time when the best operative results are possible. Therefore, not only does the practitioner other than the neurologist need instruction in the early diagnosis, but the neurologist needs constantly to be reminded of certain vitally important diagnostic criteria.

The first false tradition to be attacked in connection with the diagnosis of brain tumor is the impression which is still held widely that the triad of headache, vomiting and choked disk is necessary for the diagnosis. There is also a good deal of misconception about the proper evaluation of localizing and nonlocalizing signs. Many of the signs in the tabulation, though placed for the sake of discussion in the category of general symptoms, may at times have a definite localizing value.

General Symptoms (Some Occasionally of Localizing Value) in Cases of Brain Tumor

- Onset of symptoms may be acute even with slow growing tumors
- Headache
- Tenderness
- Choked disk in only 60 to 80 per cent (visual defects including color)
- Nausea and vomiting
- Abducens nerve paralysis
- Convulsions
- Dizziness
- Bradycardia
- Static or even cerebellar ataxia (third and fourth ventricle tumors) in noncerebellar tumors
- Paresis of limbs (with large tumors not in motor area)
- Mental symptoms (in third ventricle tumors)
  - (*a*) Drowsiness
  - (*b*) Apathy
  - (*c*) Retardation of thought and movement
  - (*d*) Euphoria (frontal lobe usually)
- Roentgenographic findings
  - (*a*) Pacchionian depressions
  - (*b*) Separation of sutures
  - (*c*) Ventriculography, Lumbar Encephalography } May not be of definite localizing aid
- Spinal fluid
  - (*a*) Slight increase in number of cells
  - (*b*) Increase in protein content

It might be well to state at the beginning of this discussion that while the site of the headache is generally of no value for localization, in some cases, however, it may be of definite aid. Sharp or boring

Dr. Osnato died, June 15.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

Read before the Section on Nervous and Mental Diseases at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

bitemporal pains are occasionally encountered with pituitary tumors; occipital or suboccipital headaches with cerebellar or other subtentorial tumors, but generally the site of the headache is valueless as a diagnostic aid. So, too, with localized tenderness. In fact, in a number of cases not only is headache of no localizing value but it is not present at all and in many cases not until very late. Many patients with brain tumor come to operation also who have never suffered from vomiting. From 40 per cent of patients with brain tumors in some statistics to 20 per cent in others never have any disturbance of the disks. Convulsions, unless they are definitely jacksonian with a constantly recurring pattern, may be of no localizing value whatsoever. In some cases generalized convulsions precede the diagnosis of brain tumor by a number of years. Such a case verified at operation is briefly recounted below.

CASE 1.—B. C., a man, aged 33, single, was first seen on Aug. 3, 1917. The epileptiform seizures began a year and a half before. The patient was out walking when suddenly he suffered a generalized seizure lasting one-half hour. These seizures recurred once or twice a month. When I first saw B. C. at the Rockaway Beach Hospital he was in status epilepticus. Blood and spinal fluid examinations were reported completely negative. The patient was unconscious. All of the deep reflexes were difficult to elicit. The abdominal and cremasteric reflexes were inactive. The pupils were dilated and characterized by hippus; they were equal, and the fundi were normal. When the patient recovered from the status epilepticus, a second neurologic examination showed a complete return of all the superficial and deep reflexes. There was no facial weakness and no deviation of the tongue or uvula. The fundi were again normal. The sensory examination was entirely negative. There was no ataxia, no Romberg sign and no asynergia. There was no disturbance of vision or of hearing. In the next five years the patient had frequent seizures and a half dozen attacks of status epilepticus, several of them followed by acute maniacal attacks with gross sexual excitement; often homosexual or bestial tendencies. There was never any sort of jacksonian pattern in the seizures. The patient always lost consciousness completely. The fundi were examined many times and were found to be normal. The patient never complained of headache in the intervals and had no vomiting. For some unaccountable reason the convulsive seizures ceased in 1921, and the patient did not seek treatment again until March, 1925, when he came to the Neurological Institute in the service of Dr. Foster Kennedy complaining for the first time of frontal headaches, vomiting, diplopia and impaired vision. There was a rather typical florid euphoria, a symptom that is frequently associated with left frontal lobe tumors, though I have encountered it in tumors of the cerebellum and in several tumors of the midbrain. I shall report such cases later. There was left hemiparesis. All the deep reflexes were diminished but were slightly more active in the left extremities. The abdominal reflexes were quickly exhaustible, more so on the left. There was no Babinski reflex and no sensory disturbance. The cranial nerves were normal except for a slight left lower facial weakness and bilateral papilledema of 3 or 4 diopters. Memory for the recent past was poor; attention wandered. Blood and spinal fluid examinations were again negative.

On Aug. 21, 1925, under gas-ether anesthesia, a right frontal flap was turned down by Dr. Byron Stookey, and a large cystic glioma was found subcortically in the frontal lobe. About 60 cc. of the fluid was removed, the wound was closed, a small decompression area was left, and the patient made a good postoperative recovery. There were no further convulsive seizures. When the seizures recurred in 1924, after a free interval of three years, their character had changed. They were not jacksonian in type but consisted of a generalized tonic rigidity limited to the four extremities with no clonic phase. The last note I had from Dr. Kennedy on Dec. 15, 1925, was to the effect that the patient had a secondary optic atrophy, but his condition was otherwise favorable. I learned later from the patient's brother that about two years after the operation the patient died in a hospital in California.

The lesson to be learned from this case should be constantly before one. Every case of so-called idiopathic epilepsy should be considered potentially a brain neoplasm. At regular intervals during the treatment of these patients neurologic and ophthalmologic examinations must be recorded. This patient went for seven years without suffering from headaches or vomiting and without a sign, so far as we can tell, of papilledema until he presented himself at the Neurological Institute in March, 1925. This case was studied during the days when ventriculography was not in general use. It is quite conceivable that either encephalography or ventriculography might have been of definite aid in the diagnosis.

The following case points to a lesson which should never be forgotten. In the presence of jacksonian seizures the first thing to be considered is the probable presence of a cerebral neoplasm. This is illustrated by cases 2 and 3, both verified at operation:

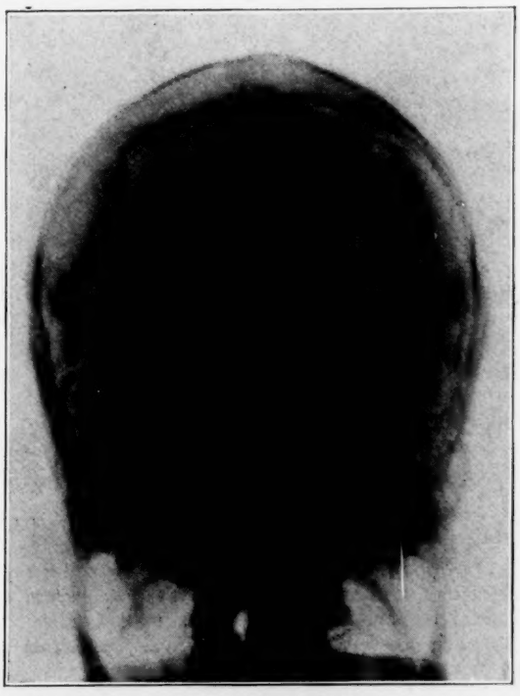

Fig. 1.—Ventriculogram taken prior to tapping of the posterior horn of the left lateral ventricle. Air has not entered left lateral ventricle.

CASE 2.—O. P., a man, aged 28, married, was first seen on July 20, 1923, when he was referred for a left facial tic of two years' duration involving also the left sternocleidomastoid and trapezius muscles. There was no headache or vomiting. The first complete left jacksonian seizure occurred in April, 1923. The convulsion began first in the tongue, then spread to the left facial musculature and later involved the left arm and leg. On Aug. 21, 1931, the patient became unconscious for the first time following a seizure, the pattern of which was not noted. The seizure ended in a generalized rigidity with much thrashing about of the arms. The patient frothed at the mouth, was found in a profuse perspiration with stertorous breathing and cyanosis. The seizure was of twenty minutes' duration.

When I first saw the patient on July 20, 1923, the neurologic examination was entirely negative. There were no focal or general signs of brain tumor except the history of jacksonian seizures. The fundi were normal; the fields were normal.

When seen on October 8, the patient had for the first time definite neurologic signs. These consisted of a left hemiparesis, including the lower portion of the face, increased deep reflexes in the left extremities, a left Babinski reflex, diminished left abdominal reflexes and definite changes in the fundi. The papilledema was about 2 or 3 diopters. There were also cortical sensory disturbances in the left hand, astereognosis, disturbance of muscle tendon and joint sensibility, and tactile discrimination. The patient was operated on by Dr. Charles A. Elsberg on October 16, at the Mount Sinai Hospital. A large gliomatous cyst was found in the right frontal lobe. Twenty-five cubic centimeters of straw colored fluid was removed. The neoplasm was adherent to the dura and infiltrated the brain tissue so extensively that Dr. Elsberg thought it unwise to attempt to remove it. A subtemporal decompression was done. The patient died on October 17, 1923.

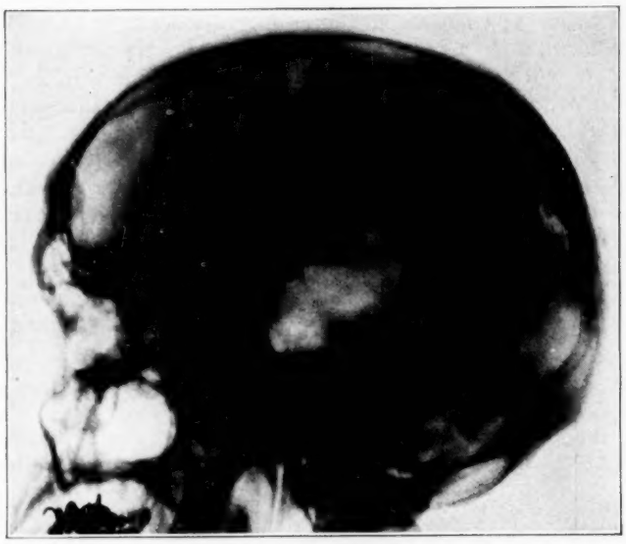

Fig. 2.—Ventriculogram taken after tapping the posterior horn, showing a cystic multilocular cavity of the left frontal lobe.

I had strongly advised operation when I saw this patient on Aug. 21, 1923, because for the first time he was complaining also of severe frontal headaches. These recurred daily and lasted four or five hours. There were no disturbances of the fundi, and no definite localizing signs until October 8. It was not until these appeared that the family physician would join me in advising operation.

In spite of the fact that the presence of jacksonian seizures amply justifies an exploratory craniotomy, in my opinion, one must not lose sight of the fact that in a great many instances cases of so-called essential or idiopathic epilepsy are characterized by jacksonian seizures, especially in the early stages. They may also occur as an epileptiform reaction in vascular disease of the brain and, of course, occur frequently in craniocerebral trauma. In spite of this, I repeat that all persons with epilepsy should be treated with the possibility of a brain tumor kept in the foreground continually and all cases of jacksonian epilepsy should be considered as brain tumors until proved otherwise.

The type of case in which ventriculography is essential as a diagnostic localizing aid is illustrated by case 4.

CASE 4.—M. L., a man, aged 41, married, was admitted to the Post-Graduate Hospital on Feb. 5, 1932, in the medical service, with the complaint of headache of two weeks' duration. The patient's general health had always been good. There was no history of venereal disease. He was apparently in excellent health and working until the onset of the present illness three weeks before admission.

His illness on admission to the hospital was summarized briefly, as follows:

(1) Severe infection of the upper respiratory tract during the first week of January, 1932.

(2) General malaise, nausea and "indigestion" of several days' duration occurring about eighteen days before admission.

(3) Visual disturbance of an undetermined nature, developing eighteen days before admission and persisting. At time of admission neither patient nor his wife was able to describe this visual disturbance accurately.

(4) Headaches, left frontal and temporal, of twelve days' duration.

(5) Slight weakness of the right leg, of six days' duration. The patient was able to walk about the ward, but there was a definite spasticity of the right leg and restriction of associated movements of the right arm.

(6) Aphasia, beginning about six days before admission. The memory for words rather than articulation was disturbed. It would appear, therefore, to be more of an association (sensory) type of aphasia than a motor aphasia. However, the original admission history was given by the patient himself to the house officer, and except that the patient would stumble over individual words occasionally he was able to make himself understood. He comprehended all spoken commands and executed them without evidence of apraxia. No tests for agraphia were made on admission.

(7) Vomiting, once, the day before admission.

The physical examination showed a man of middle age, apparently not acutely ill or in pain, well oriented, but with some slight defect in expressing his thoughts. The only findings were hyperactive reflexes in both upper and lower extremities, equal on both sides; abdominal reflexes absent on the right and left; slight weakness of the right side of the face, and slight weakness of the right leg with a tendency to drag the limb in walking.

On February 9, the patient became lethargic and confused. The aphasia described persisted. There was some weakness of the right side of the face and of the arm and leg. When placed in the Romberg position the patient fell to the right with his eyes open or closed, and had a definite static ataxia. He dragged the right foot, and there was no swing to the right arm. There was some spasticity of the right arm and leg. There was definite dysmetria in performing the right finger-to-nose and heel-to-knee tests. The deep reflexes were

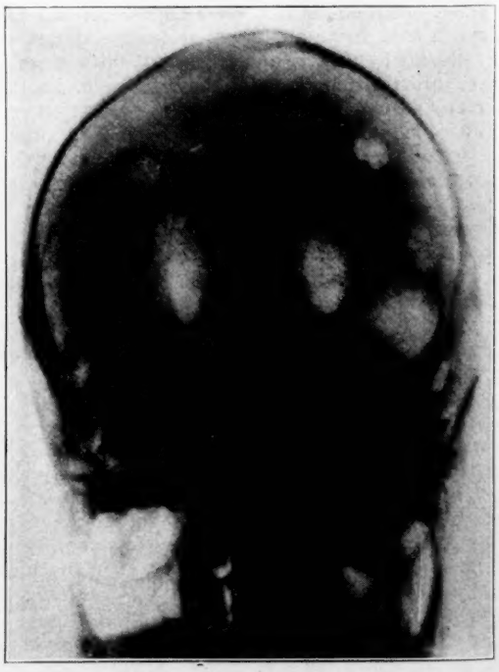

Fig. 3.—Note the air in the cyst separated from the left lateral ventricle.

all active, but greater on the right than on the left. The right upper abdominal reflex was reduced and the lower was absent. The left abdominal reflexes were normal. There were positive right Babinski and Chaddock reflexes. The pupils were irregular, the right larger than the left, and practically fixed (but this may have been due to a mydriatic given four days previous to the examination). The fundi appeared normal. The tip of the tongue deviated to the right on protrusion. The palate was normal. Sensory tests were unreliable, but there may have been an impairment of deep sensibility in the fingers and toes on the right side.

By February 11, further rapid changes had taken place in the patient's condition. The right abdominal reflexes were entirely absent. There was a right ankle clonus. The pupils remained unequal, the right larger than the left. Reaction to light was still sluggish. The right fundus showed a blurring of the margins of the disk for the first time. The patient was more deeply stuporous than two days before. The diagnosis of a cerebral neoplasm of the left side of the brain in the posterior part of the frontal lobe impinging on the motor area was made.

Consultation by the eye department failed to confirm a suspicious blurring of the right disk, and the following report was made: "Temporal pallor, more marked on the right than the left; fundi otherwise normal. Pupils rather sluggish. This may be due to mydriatics previously used."

The routine laboratory data was negative. The Wassermann reactions of the blood and spinal fluid were negative, the colloidal gold curve normal (0000000000), the spinal fluid cell count four and the globulin negative. Roentgen examination of the skull was negative.

The following is from the operative notes by Dr. John E. Scarff:

"I felt certain of a left sided lesion because aphasia was a very prominent symptom. This man was also stuporous, which pointed to a frontal lobe lesion. Therefore, the point of doing a ventriculogram was to determine whether the lesion was temporofrontal or temporo-occipital in location. The only way in which to determine that in a patient so drowsy and incooperative was by ventriculography.

"I performed a bilateral trephine, but withdrew fluid only from the right side. About 40 cc. of clear, colorless fluid under normal pressure was removed and 35 cc. of air replaced. Roentgenograms showed a well filled normal looking ventricle on the right side, but it was impossible to get any air across into the left ventricle. That could mean only one thing, that the left ventricle was compressed. We took the patient back to the operating room again, and this time tapped the posterior horn on the left side and removed fluid which seemed to be slightly yellow and was slightly thicker than spinal fluid should be. I removed about 50 cc. and replaced it with air. Roentgenograms indicated a cystic multilocular cavity on the left side, irregularly shaped.

"Following this the patient was much better. Three days later I turned up a flap over this area. When the dura was exposed it was quite tense. I introduced a ventricular needle through a nick in the dura, into the temporoparietal area and at a depth of 2 cm. obtained yellow, viscid fluid; 20 or 30 cc. was removed. The dura was then opened widely. The surface markings of the cortex were not particularly abnormal, except possibly a widening of the convolutions in this area. The motor area was identified with a galvanic stimulating electrode. Staying well behind this area an incision was made through the convolution which seemed most distended. We went down through the cortex about 2.5 cm., and at a depth of 2 cm. below the surface of the cortex a multilocular cyst was entered; its exact shape and contour could not be accurately determined because it was collapsed. It still contained some of the fluid previously described. Its lining resembled that seen in a subdural hematoma, smooth and glistening, but slightly gray. There was no edema of the brain tissues surrounding the cyst.

"Low down on the floor of the cyst, near the midline, was a nodule about the size of the terminal phalanx of my finger. We removed this tumor nodule, I believe, completely. It has been established with reasonable certainty that if one removes the small nodule of tumor, one does not have to bother with the wall of the cyst. So far as any tumor activity is concerned, this wall is inert."

This case illustrates one of the items in the table which speaks of the presence of static ataxia (or even cerebellar ataxia) in noncerebellar tumors. Dr. Scarff's notes describe this patient as being unsteady in the romberg position with a tendency to fall to the right regardless of whether the eyes were open or closed, and also of definite dysmetria in performing the finger-to-nose and heel-to-knee tests on the right side. It must be kept continually in mind that definite static and even appendicular ataxia of a cerebellar type may be found associated with frontoparietal tumors. This, of course, is because of the connections of the frontoparietotemporopontile cerebellar tracts with the cerebrum by way of the middle cerebellar peduncles. If this point is lost sight of neurologists and surgeons will continue to be embarrassed to find at operation for supposed cerebellar tumors that the tumor has not been properly localized and is found at later operation in the frontoparietotemporal lobes. With tumors in the third ventricle, cerebellar ataxia is made possible by compression on the superior cerebellar peduncles and in the fourth ventricle on the juxtarestiform or inferior cerebellar peduncles.

Aside from illustrating the aid that ventriculography may give at times, this case is of interest because of the fact that judging from the nature and extent of the cystic gliomatous growth its duration must have been quite long, yet the onset of symptoms was comparatively rapid and for a time caused the medical department, in whose service the patient was originally admitted, to consider that the patient had some sort of inflammatory cerebral disease. This especially because the illness began with a severe infection of the upper respiratory tract. The patient had not complained prominently of headache until shortly before admission, and there were no ocular findings suggestive of tumor. I should like to call attention to Dr. Scarff's remarks concerning the localizing value of the stupor, which he said pointed to a frontal lobe lesion. The fact of the matter is that stupors are seen earliest and are a prominent feature of lesions in the neighborhood of the third ventricle and midbrain generally, especially in children. This is due to the comparatively early obstruction of the cerebrospinal fluid circulation and consequent internal hydrocephalus. I would, therefore, again point out the fact noted in the table that while euphoria is characteristically found in lesions, especially of the left frontal lobe, drowsiness and apathy, and even stupor, as in this case, may exist not only in frontal lobe tumors, but frequently occur in tumors of or near the third ventricle.

Psychiatrists should keep alive their interest in neurologic problems. Especially is this true of brain tumors. While I did not dwell at length on the fact, it is nevertheless true that in the first case, B. C., the psychiatric side of the situation was perhaps even more striking than were the convulsive seizures. On a number of occasions coincident with or following status epilepticus, this patient was actively psychotic. There was much confusion with a delirial picture characterized by great excitement, sexual assaults even on male attendants, intense sexual excitement, enormous increase in psychomotor activity as exhibited by restlessness, distractibility, manic-like production and at times a tremendous euphoria. This, of course, is a rare picture in brain tumors, but the milder euphorias, the flippancy and the occasional periods of confusion and

muddled thinking seen with frontal lobe tumors often lead to erroneous psychiatric diagnoses and commitment. Men with wide experience in the state hospitals will immediately agree that the not inconsiderable number of cases of brain tumor discovered in these institutions for the first time at autopsy is a striking confirmation of the facts hinted at here. Of even greater interest to the psychiatrist, however, than the euphorias or excitements, are the hallucinations which may occur with certain tumors, and of these the hallucinations associated with typical uncinate fits are of absorbing interest.

CASE 6.—O. M., a man, aged 39, married, was first seen on Feb. 7, 1928. He complained of peculiar attacks of trembling and weakness of the right upper extremity, and occasionally also of the right lower extremity, which recurred nearly every day and were associated with peculiar hallucinations of taste and smell. The patient found it difficult to describe these for they were like nothing that he had ever actually experienced before. The hallucinations, however, were vivid and were soon followed by a brief period of unconsciousness and then a typical jacksonian seizure. I witnessed these attacks many times. The seizures were limited to the right side of the face and the right arm, and occasionally the right lower extremity was also involved. The attacks generally began in the right upper extremity, and on rare occasions the jacksonian seizure was limited to this extremity and was not preceded by the hallucinations of smell or taste. The movements were typically clonic. The patient frequently continued talking during the attack, although his speech toward the end of the period of observation, before operation, grew increasingly difficult to understand. During the attacks and for a brief period subsequent to them, he would misuse words. He never fell in any of the attacks. The aphasia never lasted for more than a few minutes. There was no headache or vomiting. There never were any changes in the disks. The fields were normal. There was a mild right lower facial weakness brought out only when the patient laughed or smiled involuntarily. In the Romberg position the patient tended to sway to the right. The right arm reflexes were slightly more active than the left. The abdominal and cremasteric reflexes were equal. There was no Babinski reflex or clonus. The difference in the arm reflexes finally became more definite, and the right patellar and tibioabductor reflexes became active. The abdominal reflexes continued to be equal, but the right cremasteric was slightly less active. There never were any sensory disturbances, no ataxia of the extremities or asynergia of the trunk. For the first time on June 18, the uncinate fits became associated with a peculiar visual illusion. Everything would appear upside down, and objects were enormously and disproportionately large. On several occasions the patient saw a hand with a lighted candle before his eyes, or flaming spots. On other occasions following this he would see faces and people whom he had never seen before. During these experiences he realized clearly that no one was present. There was no loss of consciousness.

Roentgen examination on March 15, after lumbar encephalography, showed "comparatively normal ventricular contour excepting that the anterior horn on the left side was not filled. It is possible that this may be due to a tumor on the left side."

Dr. Byron Stookey saw the patient with me about this time at the Post-Graduate Hospital, Columbia University, and the diagnosis of a left temporosphenoidal lobe tumor was made.

Operation was performed on March 21. A left osteoplastic flap was done. The dura was tense and not pulsating. Puncture of the left lateral ventricle showed the fluid to be not under increased pressure. In fact, the amount of fluid obtained was much less than usual. There was a blood clot about 2 or 3 mm. in thickness in the pia arachnoid. This was of a dark color and in places quite attached to the dura. It was attributed probably to the previous injection of air. No tumor was found, though the temporal lobe was explored quite deeply by needling.

In spite of the lack of definite verification at operation, the nature of this man's attacks and the development of the symptoms were so typical that he was given high voltage roentgen therapy. The fields were taken repeatedly following this, but no hemianopic disturbance was found. In January, 1929, the patient began to complain of occasional severe headaches. Lumbar encephalography revealed practically the same picture as before, and Dr. Stookey and I again advised operation, but the patient refused because the jacksonian attacks had become less severe and infrequent. They consisted chiefly of minor petit mal attacks which were fleeting though always preceded by hallucinations of smell and taste. The patient went to Europe for a long visit and then was well enough to return to work for a period. He has not been seen since May, 1931, and because he had improved as a result of the roentgen therapy he refused at that time to consider further surgical treatment.

The history and neurologic signs seem definitely to point to the diagnosis made, yet ventriculography failed to give any material help. The difficulty of exposing small tumors in the hippocampus and cornu ammonis, however, must be considered before one finally registers a failure against ventriculography.

Occasionally, as in case 3 and in the case about to be described, an associated emotional situation may mask the picture and confuse the clinician.

CASE 7.—N. P., a boy, aged 13, the son of a physician practicing in California, was seen by me on Nov. 10, 1931. There had been a marital storm with much emotional stress and as a result the youngster was in a highly emotional state. The boy cried a good deal, was fearful and apprehensive at night, had night terrors, insisted on having his window open, gasped for air if it was closed, and was generally restless and slept badly. The onset was given as July, 1931. Soon after this he complained of peculiar abdominal sensations which seemed to terrify him. More recently the boy complained of headaches and loss of vision. The youngster's uncle, also a physician, considered the situation a neurosis.

Examination showed vision 20/50, not corrected by glasses. There was papilledema of both disks of about 4 diopters. The pupils were quite large, about 6 mm. They reacted poorly to light and moderately in accommodation. Consensual light reactions were absent. There was a paralysis of upward gaze, and the ophthalmologist reported the following three days later:

The palpebral fissures were normal. Fine nystagmoid jerks were noted on extreme lateral movement to the right. There was paralysis of the upward gaze. Weakness of both sixth nerves was apparent, more noticeable on the right. The pupils equal, 6 mm.; they reacted feebly to light and in accommodation. There was convergence due to paresis of both sixth nerves. Choked disks of 6 diopters were seen in each eye.

The boy's general body conformation was studied and the following notes were recorded:

"So-called eunuchoid proportions. Suggestion of lower girdle adiposity of horizontal fold at the root of the penis and of macrogenitalism. Rather marked hypertrichiasis of all four extremities." The findings were characteristic of pineal tumor.

Routine laboratory examinations were negative. No lumbar puncture was permitted because of the diagnosis of a subtentorial neoplasm.

Roentgen examination of the skull on December 2 showed "the sella turcica relatively large with thinning of the floor and atrophy of the clinoid processes suggesting pressure atrophy. The suture lines are also somewhat widened suggesting increased intracranial pressure. Diagnosis: large sella with pressure atrophy of floor and clinoid processes; slight increase in intracranial pressure."

A diagnosis of pineal tumor was made. A ventriculogram, which was made at the Neurological Institute in the service of Dr. Charles A. Elsberg, showed dilated third and lateral ventricles and unvisualized fourth ventricles, and was reported as showing definite evidence of a subtentorial tumor. The only change in the neurologic status that occurred during the boy's stay at the institute was that the tendon reflexes in the right upper and lower extremities became more active on the right side. The abdominal reflexes were absent, there was a double Babinski reflex, and a slight amount of spasticity appeared in

the right extremities. The papilledema continued. The pupils became small and finally did not react either to light or in accommodation. There were paralysis of the upward gaze, bilateral ptosis, right facial weakness and bilateral deafness, which, of course, was again suggestive of a tumor in the region of the corpora quadrigemina and the pineal gland. Death followed within a few hours after the ventriculogram was made. The patient developed a high temperature, became stuporous, developed decerebrate rigidity and died. Autopsy was refused.

This case illustrates the item in the table concerning the abducens nerve paralysis. In a considerable number of cases of brain tumor, paralysis of this nerve, particularly bilaterally, is valueless as a localizing sign. The sixth nerve has the longest intracranial course of any of the cranial nerves. Great increase in intracranial pressure causing a distortion of the pons and brain stem generally readily distorts and compresses the abducens, giving rise to paralysis which may be of no localizing value. It must be noted also that this boy showed in the closing days of his illness a facial weakness which obviously also was of no direct localizing value. With extensive tumors, and in the presence of greatly increased intracranial pressure, a facial weakness of the upper motor neuron type may not be at all a local symptom. With large tumors anywhere in the brain, including also the cerebellum, facial weakness and paresis of the sixth cranial nerve may occur and must be evaluated with these considerations in mind.

If one keeps in mind the pure cerebellar syndrome and its outstanding features, it is usually readily differentiated from tumors in the frontoparietotemporal region which have associated with other symptoms a static ataxia. The major differential point between tumors of the vermis or of the hemispheres of the cerebellum and tumors in the cerebellopontile angle has been briefly and strikingly summarized by Prof. Giuseppe Ayala.[1] In angle tumors the first symptoms that make their appearance are the cranial nerve disturbances (fifth, sixth, seventh and eighth). These progress evenly for a time and then are followed by the cerebellar disturbances. The acoustic tumors, of course, belong in this group. They constitute about one third of the tumors occurring in this region. In the tumors of the cerebellar hemispheres and the vermis, on the other hand, there is a precocious and rapid development of symptoms of increased intracranial pressure in the posterior fossa and eventually intracerebrally generally. These symptoms are demonstrable by manometric, ventricular, spinal and roentgen studies and by clinical signs. At the same time there is the rapid development of unilateral or bilateral cerebellar or vestibulocerebellar symptoms; finally, the entire absence of, or the late development of, pyramidal, sensory and bulbar symptoms is of importance in differentiating cerebellar tumors from cerebellopontile angle neoplasms.

The main features of the typical cerebellar tumor, if kept constantly in mind, will prevent the neurologist from mistaking these frontopontotemporal tumors associated with static ataxia from the pure cerebellar lesions, the outstanding features of which are the hypotonia, reduced or absent reflexes, truncal and nonequilibratory ataxia, nystagmus and intense vertigo. These attacks of intense vertigo associated with forced attitudes and occasional periods of unconsciousness are what is known as the "cerebellar fits." They constitute the third most important distinguishing feature between cerebral and cerebellar tumors.

1. Ayala, Giuseppe: Sintomatologia neurologica dei tumori subtentoriali, Riv. oto-neuro-oftal. 8, September-October, 1931.

This otherwise typical pituitary tumor is presented because of the extremely late appearances of headaches and visual disturbances; also because of the splendid result achieved by the surgeon:

CASE 7.—C. S., a man, aged 67, married, was first seen on May 2, 1930. Until August, 1929, he had never suffered from headache. On that date, while watching a baseball game, he suddenly noticed that his vision became blurred in the *right* eye. This gradually became worse. About one and one-half years before he stepped off a bus as it jolted away and he landed rather heavily on his feet. He recalled that he had suffered a pain in the temple and momentarily blurred vision in the *left* eye, but in a few minutes this disappeared. Following this he had a sensation as if a film had been placed over his left eye and some time later he noted that when he looked to the left he did not see well with the left eye. During the intervening time, that is, for one and one-half years, he had no headaches and no other trouble. For a few weeks before I saw him he suffered from a pain in both temples and in back of both eyes. The patient's headaches now became quite intense. Vision in both eyes was quite reduced. He was fitted with glasses in October, 1929, but these did not improve his vision. Finally he was referred to Dr. A. Milton Goldman, an ophthalmologist, who immediately realized the situation. Dr. Goldman reported vision in the right eye as 16/30 minus with the pin hole test. Vision in the left eye was nil. There was no light perception or projection. Examination of the fundi showed an optic atrophy in the left eye and beginning optic atrophy in the right; there was no swelling of the disks. The fields showed a loss of the temporal field in the right eye and slight lateral nystagmus. Examination disclosed a left blind pupil, that is, the consensual light reaction, right to left, was present and active; that from left to right was absent. The left pupil was slightly larger than the right. There was a slight unsteadiness in the Romberg position but no true Romberg sign. The cranial nerves were negative. There were no pathologic reflexes, either tendon or superficial, except that the right cremasteric reflex was much reduced. There was no paresis in any of the extremities, and no ataxia. There were no sensory disturbances. Mentally the patient was normal except that he was, according to his wife, unusually slow and deliberate in answering questions. He was 6 feet 1 inch (185.4 cm.) in height, had enormous hands but was rather thin, though it was said that he had always been slender. He weighed 160 pounds (72.6 Kg.). There was no polyuria or polydipsia. His blood pressure was 100 systolic and 60 diastolic, and on another occasion 100 systolic and 58 diastolic. This, with the characteristic hemiopic fields and the optic atrophy, were sufficient to make the diagnosis.

The roentgenogram showed an enlarged sella turcica with a wide space between the clinoid processes; there were no erosions. The basal metabolism was 20 per cent below the average normal.

No time was lost in working up this case from the standpoint of the physiology of the pituitary and hypothalamic region, because I considered the case surgically an emergency. If anything was to be done to save the vision in the right eye it had to be done quickly. Dr. Harvey Cushing agreed with me and operated on the patient immediately after his admission to the Peter Bent Brigham Hospital. Dr. Cushing wrote me on June 27, 1930, that he had successfully removed a pituitary adenoma. He said, "I found a very large tumor which was beginning to extrude through the pituitary capsule."

On June 29, Dr. Goldman reported vision and fields improved in each eye: O. D., 20/30; O. S., 20/40. On October 19, vision was: O. D., 20/30 plus; O. S., 20/30 plus, with marked widening of the fields of vision. One year later (Oct. 16, 1931) there was a definite loss of vision and fields again in the left eye. Finally vision in the left eye was reduced to perception of hand movements.

I demonstrated the patient before the matriculates in neurology at the Post-Graduate Medical School, Columbia University, Dec. 11, 1931, and he was perfectly well except that there was total blindness in the left eye. The visual fields in the right eye were normal. Vision was 20/30. Unfortunately the diagnosis was not made sufficiently early in this case to

save vision in the left eye. The atrophic process in the left optic nerve had gone too far to be saved. It does seem that the men who were observing this patient in August, 1929, should have recognized the classic textbook picture of pituitary neoplasm. The surgical result was extraordinary in view of the man's age. He was 67 years of age when operated on. He is now past 69 and is quite comfortable and active. In no branch of cerebral surgery have such tremendous advances been made as in the surgery of the pituitary.

This case enables me to close this paper with a plea for the early diagnosis of brain tumors. The patient would almost certainly have had perfect restoration of vision in both eyes had the diagnosis been made earlier.

CONCLUSIONS

The presence of headache, vomiting and choked disk, or any combination of these symptoms is not a prerequisite for the diagnosis of brain tumor.

Generalized convulsions are of no localizing value for they may occur with cerebral tumors distant from the motor area. However, every case of so-called idiopathic epilepsy must be considered a case of probable brain tumor.

Every case of jacksonian epilepsy must be considered a case of probable brain tumor until proved otherwise.

Psychotic symptoms are not necessarily limited to cases of left frontal lobe tumors. The allegedly typical euphoric characteristics of these tumors may be found in cerebellar and third ventricle tumors.

Drowsiness and stupor may occur in frontal lobe tumors, though they are more characteristic of third ventricle tumors.

Apparent psychoneurotic or psychotic symptoms which develop in an emotional background may mask the onset of the development of symptoms of brain tumor.

Especially with slow growing old cystic gliomas in the frontal lobes, more particularly the right, symptoms of brain tumor may develop rapidly and may give an appearance of the onset of acute cerebral disease.

Hallucinations of taste and smell preceding jacksonian seizures, at times associated with spacial illusions and visual hallucinations, may occur with temporosphenoidal lobe tumors.

Cerebellar ataxia, both static and of the extremities, may occur with tumors in the frontotemporoparietal regions. The differentiation between these tumors and cerebellar tumors is easy. Of the many important differential features, three are emphasized:

1. In the frontotemporoparietal tumors the asynergy, in my experience, has never been noted in the trunk. This is an exclusive feature of cerebellar tumors.

2. The gradually increasing hypotonus and eventual disappearance of the deep reflexes in cerebellar tumors never occurs in the former.

3. "Cerebellar fits" are seen only with subtentorial tumors.

Papilledema is a more constant and prominent feature in subtentorial tumors than the tumors of the cerebral cortex.

The main differential feature between angle tumors and tumors of the cerebellar hemispheres is that in the former the first symptoms to make their appearance are the disturbances of the fifth, sixth, seventh and eighth cranial nerves. These progress evenly for a considerable time and then are followed by cerebellar disturbances. With tumors of the hemispheres and the vermis hand in hand with the precocious development of signs of increased intracranial pressure are developed unilateral or bilateral cerebellar or vestibulocerebellar symptoms. Only very late do pontile, bulbar, pyramidal tract and sensory symptoms develop.

ABSTRACT OF DISCUSSION

DR. HENRY DASPIT, JR., New Orleans: Many qualified neurologists delay unduly in seeking the aid of the neurosurgeon. Among the reasons for such delay may be mentioned their great concern as to the high mortality rate in cranial surgery and a tendency to regard operative procedure as a last resort. This is often the result of fear of discredit in the event of a missed diagnosis. A high operative mortality rate will continue until better early diagnoses are made and early surgery done. I am glad to hear Dr. Osnato use the expression "exploratory craniotomy." The neurosurgeon has no more opportunity to have a low operative death rate than would the abdominal surgeon who was destined to operate for appendiceal disease only until rupture had occurred. The term "surgical abdomen" is heard, so why not "surgical head"? The outstanding message in this excellent paper is the well taken position that a classic grouping of signs and symptoms should never be awaited before a conclusion. Caution regarding a diagnosis of epilepsy is timely, especially after 30 years of age. A spasmic state, generalized or jacksonian, should always be regarded with suspicion and repeated careful examinations made. So, also, with persisting head pain. Choked disk is no more necessary for a final diagnosis of brain tumor than is ataxia necessary for a conclusion of tabes dorsalis. There is little more important in the early diagnosis of brain tumor than a carefully taken history with particular attention given events of probable bearing extending over a period of years rather than weeks. The earliest manifestation is often more important than the findings elicited on examination.

DR. H. R. UNSWORTH, New Orleans: I don't know of any question so generally neglected by the neurologist as that of considering intracranial lesions from the standpoint of operative surgery. There are other medical problems making one feel at times that one is dealing with a localized tumor. Some of the postencephalitic syndromes are examples. An early diagnosis is most desirable, and the surgical attack of primary importance, if indicated; yet the seriousness of craniotomy suggests the necessity of some definite symptoms or signs present before exploratory surgery. Many times there is serious damage needlessly, when a little more hesitancy would have avoided a mistake. It has been my experience that craniotomy is a major affair, and one only to be advised after profound consideration of the case under study, and when some suggestive localization is possible. One of the greatest aids in suggesting cranial surgery is the spinal fluid examination. Though it is not specific as regards the nature of the cranial lesion, its negative results in the suspected case of brain tumor would strongly suggest to me the possibility of the lesion not being neoplastic, of course, this is not always true. Would Dr. Osnato relate his experience with cases showing only suggestive signs and symptoms, and, when craniotomy had been done, what percentage of tumors were found, and if the spinal fluids were of any great aid in determining his recommendation for exploratory craniotomy?

DR. HENRY R. VIETS, Boston: I cannot overemphasize the point that a diagnosis of brain tumor should be followed by surgical exploration as quickly as possible. Too many cases have gone weeks, months, even years with the diagnosis made before operation was attempted. I think that Dr. Cushing's recent book on his 2,000 cases of brain tumor bears out the point that the best results are obtained when the diagnosis is made early, even before the so-called cardinal signs of increased intracranial pressure have appeared. This is becoming more and more common in neurosurgical clinics, with the aid of the x-rays, ventriculography, and other diagnostic procedures.

DR. ERNEST SACHS, St. Louis: I think that perhaps the neurosurgeon has overdone it a little in being tempted to put the blame for poor results on the neurologist who doesn't make a diagnosis early enough. It is up to the neurosurgeon. In the last years I think it has been demonstrated that the

improvement in results, as one analyzes a series of cases, is not due entirely to getting cases earlier but due to improved technical methods in handling the whole problem more effectively. Dr. Osnato spoke of a case of frontal lobe tumor not showing euphoria. Some years ago I reviewed forty-five frontal lobe tumors, analyzing them from the point of view of symptomatology, and one thing that was particularly striking was that this symptom, which has in the past been associated with frontal lobe lesions, witzelsucht, was strikingly absent. I concluded that, while it was of value when present, one could not depend on it to a great extent. Another point that came out in the same series was that one of the earliest symptoms of many brain tumors is generalized convulsions. Patients have had convulsions for years, sometimes, before they show any other evidence of having a brain tumor. I feel that any adult who hasn't syphilis and develops convulsions should always be considered from the angle that he may have an underlying brain tumor.

DR. MICHAEL OSNATO, New York: In the table to which I briefly referred, reference is made to the fact that in brain tumors there is an absolute increase in the protein content and a moderate pleocytosis, but experience has taught that those things by themselves are generally poor leads and of but little help diagnostically.

FORENSIC PSYCHIATRY

A REVIEW OF PROCEDURE IN COLORADO

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The dissatisfaction of the psychiatrist, the legal profession and the public with the character of the relationship existing between psychiatry and criminal law is generally admitted. This dissatisfaction has its foundation in a wide variety of factors whose complexity precludes the possibility of any simple remedial formula. Underlying the procedures for improvement, however, are several considerations which, even though well known, warrant review.

Defined as the authoritative regulation of social relations, the law is confronted with the necessity of meeting the needs of a changing civilization. If it is to prevail, it must validate its authority by the certainty, uniformity and equality of its regulations. If it is to progress, it must reflect some of the alterations in individual relationships which arise as a result of the varying conditions under which men live. The nature of judicial procedure with its dependence on precedent tends, however, to emphasize the element of stability, and changes are introduced slowly. The dominant concern of law is the preservation of the social institution.

On the other hand, psychiatry considers the individual as its principal field of study. Social forces are valued in accordance with their influence on the individual and their effects on behavior. Precedent is accepted as an explanation of the present but not as an obligatory rule for procedure. Since the concern is primarily for the individual, psychiatric interest is directed toward the establishment of those truths that are applicable to the individual. Consequently, the psychiatrist is eager, sometimes hasty, to apply his theories and to demonstrate their success in a single problem. The result, if successful, while of undoubted benefit to the individual, remains questionable for application to a group. The cumulative body of knowledge which such experiments place at the service of the psychiatrist adds to his resources for the study of individual cases but should not justify him in setting up such procedures as standard.

With the inevitable conflict which arises from these perspectives, one must consider public opinion. As expressed by Dean Pound:

> We may not expect to have a system of criminal justice far in advance of what the public can and will understand and believe in. We must make the demands of science clear and familiar to the public before we may, in deference to science, tear down much to which men are accustomed and build up that which is new. When science is itself in a state of flux, when new discoveries, new theories, new methods are set up before us day by day, it is increasingly difficult to make an adjustment of legal conceptions and legal institutions and legal practices to scientific knowledge for the time being which will at once be intrinsically sound and commend itself to public understanding.

Since the time the psychiatrist first manifested an interest in the legal offender, public attention has unfortunately been directed principally to but one phase of his interest, namely, the protection of the incompetent offender at the time of the trial. The fact that, in pursuit of his interest, he has appeared in behalf of one whose guilt was usually admitted, and had in effect intervened between the defendant and traditional Mosaic retribution, has raised an instinctive resistance. This not only has resulted in materially reducing the effectiveness of the psychiatrists appearing in such trials but also has been reflected in the attitude assumed toward the psychiatrist's work as a whole. I desire to present a review of a procedure which in practice is providing a basis of improved understanding for the solution of common problems encountered by the law and the psychiatrist.

A law enacted in Colorado in 1927 provides that "if one of the defenses of the defendant be insanity, a plea must be made of not guilty by reason of insanity at the time of the alleged commission of the crime, or not guilty by reason of insanity since the time of the alleged commission of the crime, or not guilty by reason of insanity at the time of the alleged commission of the crime and since. . . . Upon the making of any such plea, the judge shall forthwith commit the defendant to the Colorado Psychopathic Hospital at Denver, or the State Hospital at Pueblo, where he shall remain under observation for such time as the court may direct, not exceeding one month. The judge may also appoint a commission of one or more physicians, specialists in mental disease, to examine the defendant during said period and the court may call and examine said physicians as witnesses at the trial. Either the state, or the defendant, or both may call said physicians or physician as witnesses but this shall not preclude the state or defendant from using other physicians." If the plea is not guilty by reason of insanity since the time of the alleged commission of the crime, "the case shall be set down for trial on the issue of insanity alone, with no reference to the crime." If the plea be "not guilty by reason of insanity at the time of the alleged commission of the crime or not guilty by reason of insanity at the time of the alleged commission of the crime and since," after the period of observation, the case, in the discretion of the court, may be either set for trial on the insanity issue alone and the defendant committed to the Colorado State Hospital at Pueblo, or held for trial on the main case. If the verdict rendered by the jury is "not guilty by reason of insanity," the defendant shall be confined in the State Hospital under the laws governing the institution.

Read before the Section on Nervous and Mental Diseases at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

Under this law 123 patients have been admitted to the Colorado Psychopathic Hospital and 21 patients admitted to the State Hospital at Pueblo. A wide distribution in the various categories of crime was presented. Of the 142 patients studied, 35 were regarded as normal, 32 as psychopathic personalities without psychosis and 15 as mentally deficient without psychosis. The remaining sixty were considered psychotic and were grouped under the classification of the American Psychiatric Association. The formal findings returned to the court were either sanity or insanity. In addition to this formal report, there is available to the court a complete abstract of the record with a formulation of the case from a psychiatric point of view. This includes an evaluation of the factors in the background which have contributed to the development of the type of response shown by the patient and a summary of the psychiatric procedures considered desirable for the patient.

Recommendations to the court were due process of law for sixty-one, commitment as insane for forty-three, institutionalization for nine, suspended sentence with psychiatric supervision for eight and commitment to a school for defectives for two. The recommendations of "institutionalization" and "psychiatric supervision" were accompanied by the statement that it was recognized that facilities for carrying out these recommendations were not available but that these cases especially required individualization.

The coordination with the courts was gratifying. In only seven cases, or 4.9 per cent, were the recommendations of the hospital not concurred in by the jury trying the case. In only three cases were the recommendations directly reversed. Two of these cases were in rural communities where public sentiment was so aroused that the disposition of the case was manifestly in terms of community reprisal. In the trial of these cases the verdicts were rendered by juries made up of the defendant's peers in fact as well as in theory. Imprisonment in cases in which institutionalization or psychiatric care was advised represents a compromise in certain cases in terms of the facilities for meeting the recommendations.

From a psychiatric point of view, the law has obvious advantages. The procedure permits examination with an impartial attitude. Acting as an officer of the court, the examiner directs his efforts toward the determination of the person's mental condition. The question of the defendant's responsibility in relation to the alleged act is considered as only one part of the whole picture. The examination is conducted in a hospital where the method of examination and the equipment permit a thorough investigation and observation under varying circumstances. The medical aspects are emphasized throughout, a desirable feature in keeping with the well recognized fact that the criminal insane are no different from any other insane, the distinction depending on whether there is an infraction of a social or a legal rule.

During the trial, whether the hospital officer is summoned by the defense or by the prosecution, he is still identified with the court. The frequency with which the cross-examination of the psychiatrist in the average trial in the past has been limited to an interrogation concerning his fee is sufficient comment on his accepted status in those cases. This practice is old and admittedly unfair, but so long as his appearance in court is dependent on his observations in support of an allegation, the psychiatrist, regardless of his scientific integrity, cannot avoid the implication that his interest is selfish rather than scientific. Acting as an agent of the court, his judgment may be questioned and his opinion may be reversed, but his motives cannot be attacked without attacking the court which is set up by the people that justice may be administered.

The law is commendable from the legal point of view by virtue of the guaranty of constitutional rights which it provides. It is not so revolutionary in its method that it threatens in the least the stability of existent procedures. The state and the individual are adequately protected by the opportunity afforded for the retention of such other physicians as they desire.

A necessary step in furthering the cooperation between physicians and lawyers is to increase the understanding of psychiatric concepts by the members of the bar. To this end a course in psychiatry has been established in the University of Denver Law School. This course is required of second year students and consists of didactic lectures and clinics. The purpose is to acquaint the student with the main reaction types and to establish an increased understanding and interest between the recent graduate in law and present-day psychiatric developments.

The law is not a solution of this medicolegal problem. The law itself is imperfect. By making insanity rather than the disposal of the defendant the issue, it falls short of the psychiatric ideal. The issue of insanity is raised voluntarily rather than automatically. No provision is made for continuing psychiatric supervision with parole. The law has by its conservatism, however, created a feeling of rapport between courts and psychiatrists. The psychiatrist's proper interest in the individual's relationship to the law is understood better by the courts and the public as the law is continued in effect. The basis of a slowly developed feeling of confidence in psychiatric observations and recommendations is a fine foundation on which can be constructed a more elaborate sociolegal structure as indicated to an advancing medical science.

ABSTRACT OF DISCUSSION

DR. EDWARD DELEHANTY, Denver: Dr. Johnson has given the law as it exists in Colorado, and also the workings of the law as applied to individual cases. It is somewhat of a surprise to learn the number of cases that have been referred to the psychopathic hospital under this law. Although Colorado is a large state territorially, there are only one million inhabitants; yet under this law 125 cases have been referred to the psychopathic hospital alone from the courts. Time will not permit an analysis of any of these cases, but I might call attention to what appear to be the advantages and the disadvantages of the law. I think it reduces to a minimum the spectacle which one often has in the courts, referred to by the lay press as the battle of the alienists. In the last four or five years there have been only one or two such instances in Colorado, whereas previous to that time such spectacles were quite frequent. According to the law, the court appoints a nonpartisan commission. I think that is true in many of the states; but what appeals to me as being most important is the fact that the court sends them to the psychopathic hospital for observation for from two to four weeks, and when that fact is brought up before a jury of course one can see that it has great weight. Few exceptions have been taken to the judgment of the commission that was appointed by the court. Another advantage of the law is the fact that these people are confined to the psychopathic hospital, and it gives the students at the university an opportunity to study these cases under the supervision of the manager of the hospital. They have the same right to study these criminals, either sane or insane, as they have of other cases in the psychopathic hos-

pital. A disadvantage of the law is its expense. I think I am correct in saying that the expense in the psychopathic hospital is in excess of $5 a day, whereas in the jail it is less than $1 a day. Previous to the law, examination of those patients was made in the office of the warden of the jail. Of course, such facilities for expert examination as are at hand in the psychopathic hospital were lacking, yet the examiners had all the time they wanted and I don't know of any case in which there was a miscarriage of justice because of the absence of the facilities that were available in the psychopathic hospital. Another disadvantage, as Dr. Johnson has pointed out, is that members of the psychopathic hospital naturally are the ones appointed as the commission. Of course, the court has the right to appoint any psychiatrist in the city; but the law has been running so smoothly that it has fallen to the province of the members of the psychopathic hospital to act as a commission. That is an objection which has been raised by the private psychiatrists of the city. One might classify it as state medicine. I speak of this for the reason that if such a law is contemplated in any of the states, I think that provision ought to be investigated. If that would be eliminated I think the law would be about as perfect as possible. It would eliminate in large measure these court contests, which have brought discredit on medicine in general and on our own branch of the profession in particular.

DR. GEORGE S. JOHNSON, Denver: The law was devised under the direction of the Bar Association of Denver, and in its operation it has received the unqualified approval of the bar association and the district bench, at which most of these cases are tried, and of the office of the district attorneys. A few of the defense attorneys have objected on certain technical grounds in relation to the individual's right to order a trial, but with that exception it has the unqualified approval of the legal profession.

STREPTOTRICHOSIS

REPORT OF A CASE

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Streptotrichosis, a protean infection produced by micro-organisms belonging to the fungus group, probably occurs with greater frequency than reports and mortality figures would have one believe. Despite a mass of facts, clinical, biologic and pathologic, the disease picture has never been sufficiently emphasized, so that its presence may be at least suspected when certain of its very characteristic features appear before the clinician. Once suspected, only simple laboratory procedures are necessary to establish the diagnosis and clear up the hitherto complex and mystifying picture.

Claypole [1] has made a thorough bibliographic study of the literature from the first description of these fungi by Mayen in 1827 to her own review of a series of 819 cases of infections of the head and neck, reported by British and American investigators. The work of Carter [2] on Madura foot, published in 1874, establishing the pathogenic rôle of the fungus in man, is well known. Later Nocard [3] established the streptothrix as the etiologic factor of a disease of cattle called farcin de boeuf. Subsequently Flexner,[4] Wright,[5] Norris and Larkin,[6] and others published their studies of the disease under various titles, such as pseudotuberculosis, nocardiosis, sporotrichosis and pseudo-actinomycosis.

Members of these higher organisms have been incompletely classified. The classification has been based on botanic systems, giving but little indication as to the pathogenic properties. The fungi show a very marked pleomorphism on different mediums and with different amounts of oxygen supply. The organism may give a typical sporothrix picture on Sabouraud's medium but on potato may be composed of filaments without spores. The same organism may produce ray-shaped, club-bearing colonies very similar to true actinomycosis. We believe that in spite of this pleomorphism the pathologic character is always uniform and typical and that the same entity of disease will be caused by the same organism bearing a high scale of botanic variations. Sporotrichosis, streptotrichosis, nocardiosis, Madura foot, pseudo-actinomycosis, and other designations all cover the same pleomorphic organism. Until classification is standardized, the name of streptotrichosis should be retained for this disease entity.

Culturally the streptothrix is a slow growing organism. It is not surprising to find no growth till after the tenth day. It grows well under both aerobic and anaerobic conditions at room or incubator temperature. The optimum p_H should be acid 5.5, but it may also grow on neutral or slightly alkaline mediums, showing a very colorful appearance and changing from brown to green or scarlet red. Sabouraud's 5.5 p_H is the classic medium, but it is advisable to make cultures on a variety of mediums composed of rich material in order to insure positive results. In our cultures on Sabouraud's medium we have never observed growth before the third day. The growth always starts at the periphery of the brown granules, which remain as a center, and radiates in velvety white circles from it. The size increases each day and the color deepens to a chocolate brown. The growth is composed chiefly of threads with true branching. Spores may also be found. Gelatin is liquefied. No special characteristics may be found with different sugars. Streptothrix grows very readily in symbiosis with the tubercle bacillus without destroying it for as long as two months. The resistance of the organism to bactericides is high, sodium hydroxide in 10 per cent solution not impairing its growth in seventy-two hours.

Concerning the pathogenicity of the organism for animals, we have found that the guinea-pig is very susceptible. An emulsion of the streptothrix in physiologic solution of sodium chloride injected intracardially shows a widespread nodulation at the end of the second week in practically every organ, but particularly characteristic in the spleen, which is several times enlarged, and studded with minute hard, brownish nodules.

We have observed a capacity for granule production by the streptothrix in this and other cases studied. We believe that the presence of these granules, even macroscopically, is so constant and so characteristic that the diagnosis can often be made at a glance, based on the presence of these granules and their chromogenic activities. A plain smear of the suspected material, sputum and pus, will show these granules by transmitted light to be spherical, brownish, and varying in size in microscopic diameters from 0.01 to 2 mm. The granules may be formed in large conidia-like cells or in a network of filaments. Their chromogenic powers are very marked, resulting in a brownish coloration extracellularly and intracellularly. The pigment may be easily extracted. The sputum from a case of streptotrichosis may resemble, therefore, that from a case of pneumonia. The presence of granules, however, with the absence of

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1. Claypole, Edith J.: Human Streptotrichosis and Its Differentiation from Tuberculosis, Arch. Int. Med. **14**: 104 (July) 1914.
2. Carter, H. V.: Mycetoma or Fungus Foot of India, London, 1874.
3. Nocard, E. I. E.: Note sur la maladie des boeufs de la Guadeloupe, Ann. de l'Inst. Pasteur **2**: 293, 1888.
4. Flexner, Simon: Pseudotuberculosis Hominis Streptothrica, J. Exper. Med. **3**: 435, 1898.
5. Wright, J. H.: The Biology of the Micro-Organism of Actinomycosis, J. M. Research **13**: 349, 1904.
6. Norris and Larkin: Pulmonary Streptotrichosis, J. Exper. Med. **5**: 155, 1900.

hemoglobin and the derivatives, makes the differentiation possible. The amount of pigment formation influences the staining characteristics of the organism. It would appear that this is the reason for the divergence of opinion as to the staining properties of the organism. We therefore advise the examination on plain smear rather than by staining, as this may only lead to confusion.

Concerning the pathology, the following may be briefly noted: The portals of entry are the mucous membranes and the skin. Metastasis occurs by way of the related lymphatics and, seemingly more often, by way of the blood stream, to every organ. The lymph nodes have a selective property in harboring the organism, becoming indolent and hard but showing no periadenitic changes, a differential point from tuberculosis. The nodes may harbor the disease for years as a chronic lymphadenitis, until a general acute flare-up occurs, usually with fatal results. On postmortem examination the macroscopic picture of the organs is identical with that found in the acute generalized forms of tuberculosis. The lungs are most frequently selected for localization. Consolidation, caseation, bronchopneumonia, pleurisy and bronchitis are some of the extensive changes found.

Clinically the disease may be divided into two groups, one affecting the skin and the other affecting the internal organs. Peculiarly, investigators in each field seem to have overlooked or to be little concerned with the condition in the other. Stein [7] states that the disease has only rarely been observed to involve the internal organs, whereas Claypole [1] claims that 18 per cent of all cases occur in the lungs. Both divide the condition further into two groups, the acute and the chronic forms. The latter, involving the skin, may resemble tuberculids, the tertiary cutaneous lesions of syphilis, or they may become manifest as chronic dermic or subdermic nodules. The acute skin forms resemble indolent staphylococcic abscesses. Streptotrichosis of the internal organs is primary in the lungs in the great majority of cases. Bridge,[8] in a report of fifteen personally observed pulmonary cases, found it primary in all. The chronic form is often mistaken for tuberculosis and sometimes is associated with it. The acute forms affecting the lungs present an interesting symptom complex with very definite and striking characteristics. After an onset with grippal symptoms, evidence of pleuropulmonary involvement appears, with irregular rising temperature, troublesome hemoptysis, spells of intense cough with profuse, fetid, fecal odored, chocolate colored expectoration, which is followed by a drenching sweat. The physical signs of the chest show evidence of bronchopneumonia, capillary bronchitis, pleurisy and caseation. During this acute period, which may last from a few days to a few weeks, there is often evidence of an invasion of the blood stream, with stupor, delirium, and metastasis to other vital parts, generally with resulting death. Occasionally the patient may resist the overwhelming infection and enter the subacute or chronic stage of the disease.

The following case of streptotrichosis is cited in detail because, besides presenting all the important characteristics of the acute pulmonary form of the disease, it is the only case, so far as a search of the literature can reveal, that is directly traceable to a chronic skin nodule of the same etiology existing dormant for many years.

7. Stein, R. O.: Fadenpilzerkrankungen des Menschen, in Lehmanns medizinische Atlanten, Munich, J. F. Lehmann, 1931.
8. Bridge, Norman: Pulmonary Streptotrichosis, Contrib. Med. and Biol. Res. **1**: 337-346, 1919.

G. S., a woman, aged 41, with a negative family history and a history of the usual childhood diseases, was always in extremely good health. Of unusually robust constitution and a hard worker, her chief concern was avoirdupois, and, as a result, she subsisted on a sparse diet with an excess of coffee and cigarets in an attempt to keep her weight below 200 pounds (90.7 Kg.). The only other point of significance in her personal history was the presence of a dermic nodule about the size of a pea with a pin-point center, which had the appearance of the orifice of a gland duct. It was slightly elevated, firm, movable over the underlying subcutaneous tissue, and located on the outer lower third of the left leg. This nodule was present for as long as the patient could remember, at least twenty years at the most conservative estimate. On several different occasions, when she sought medical advice, physicians expressed the opinion that it was a harmless sebaceous cyst and could be easily removed if she wished.

Oct. 28, 1931, she struck her left leg against a chair and noticed troublesome bleeding, for which she sought relief. On examination the hemorrhage was observed coming from the center of the cyst, which was now occupied by a crater-like opening exuding blood and granular material. It was difficult to control the bleeding properly, and the patient was advised to have the cyst removed. This was done under procaine hydrochloride anesthesia; the cyst and a piece of the surrounding normal skin about the size of an almond pit were excised and the edges approximated with three silk sutures. The advisability of a pathologic examination was stressed to the husband, who was present during its removal, but he decided that the probable insignificance of the offending cyst, which she had had for years, did not justify the trouble and expense entailed. The specimen was placed in a bottle of alcohol, corked, and set aside. The wound healed without complication except for slight bleeding from one of the suture points. This was thought to be the reason for a peculiar violaceous coloring about the scar, although Stein mentions this as a characteristic of streptothrix skin lesions.

For forty-eight days subsequently the patient went about her daily routine but complained occasionally of indigestion and a feeling of malaise. December 15, she suffered a chill, pains over her entire body, and headache. Examination revealed nothing of significance except a temperature of 103.4 and a pulse rate of 88. A diagnosis of grip was made, an antipyretic prescribed and the patient instructed to remain in bed. The following day the temperature receded to 99 and the patient felt fairly comfortable. Despite a normal temperature, the patient was kept in bed several days longer. On the seventh day she experienced a sudden sharp pain underneath her left breast. The temperature was 100.4 and the physical signs of a dry pleurisy were elicited at the left base. All measures for complete rest and nursing care were taken, as a complicating pneumonia was feared. The temperature continued to climb slowly but steadily, and on the tenth day cough and rusty expectoration appeared. There were now physical signs over the left lower lobe of pulmonary involvement, bronchopneumonic in character, loud coarse moist râles with little change in the character of the breath sounds. On the twelfth day, bright red hemoptysis of an ounce and more appeared at frequent intervals. The expectoration, which was at times bright red, at times brownish, had an offensive fecal odor. From the fourteenth to the twenty-first day the patient passed through a very stormy period, with signs of a septicemia and a bacteremia. There was intense headache with periods of confusion and stupor. The cough was persistent with profuse expectoration varying from free blood to white stringy mucus, and at times thin brownish mucus with a distinctly fetid odor. The pulse was weak, thready and often irregular. There was extreme exhaustion, with occasional periods of cyanosis.

The physical signs became more extensive but were still limited to the left lung. At the base posteriorly there was dulness to flatness with distant bronchovesicular breathing. At the base anteriorly there was diminished vesicular breathing with many coarse moist râles. Over the upper lobe, breath sounds were often absent or greatly diminished, probably as a result of obstruction of the bronchus with thick tenacious sputum. Occasionally a cavernous element was elicited, suggesting cavity formation. The temperature varied between 102

and 104, the pulse between 90 and 100, and the respirations between 45 and 60. The Wassermann reaction of the blood was negative.

On the twenty-second day the patient suddenly rallied. She became perfectly clear mentally and the previous signs of a septicemia subsided. With renewed hope for a favorable outlook, further measures were taken for the establishment of the exact pathologic condition. A roentgenogram taken at the bedside showed a comparatively normal right lung. The left hemithorax was covered by a dense shadow with moderate displacement of the heart and mediastinum toward the right, suggesting the presence of a pleuritic effusion in addition to pneumonic infiltration of the pulmonary parenchyma. In the upper lobe, several areas of increased aeration suggested cavity formation. Tapping of the chest yielded about 120 cc. of a serosanguineous fluid, reported sterile on bacteriologic examination.

Several medical consultations were held, and the opinion was divided between influenzal pneumonia and pulmonary tuberculosis. Persistent search for acid-fast bacilli proving negative, the former diagnosis was favored till the following report was returned from the laboratory: "Fresh sputum treated with 10 per cent potassium hydroxide shows the presence of many brown granules which, crushed and examined microscopically, consist of spores and mycelia with true branching, suggesting Streptothrix as the causative organism." Continued study of the sputum on plain smear and culture bore out the impression of a streptothrix infection.

On the twenty-fourth day the patient complained of pain over the middle and outer portion of the left thigh. A small tender lump with the appearance of an acute subcutaneous abscess was noted. This became gradually less tender and larger during the next two days. A needle was inserted under sterile precautions and 5 cc. of a dirty yellow purulent material aspirated and submitted for examination. The laboratory reported the presence of the same granules and branching filaments that were noted in the sputum.

From the twenty-second to the thirty-ninth day there was slow but steady improvement in her general condition, despite the fact that the physical signs in the left lung were unchanged; the temperature hovered between 101 and 102 and the respirations between 40 and 50. Subjectively, the days were characterized by spells of intense coughing, during which the patient would expectorate large quantities of white stringy mucus, now only occasionally foul and still containing the fungus, each spell being followed by a profuse drenching sweat and exhaustion. These attacks became gradually less frequent and less severe, especially when the days were dry and sunny. When the weather was cloudy or rainy, the cough and expectoration, practically the only subjective symptoms, were almost constant and persistent. On the thirty-seventh and thirty-eighth days of her illness the weather was unfavorable, and during this time the patient had less than four hours of sleep. On the morning of the thirty-ninth day, exhausted from constant coughing, she fell asleep for one hour, during which time pulmonary edema set in with resultant coma and death.

When the diagnosis of streptotrichosis was established, its relationship to the dermic nodule removed two months previously was speculated on. A search was made for the specimen, but it was not found till a month after the patient's death. On histologic examination a cystic adenoma of the skin could be seen undergoing some degeneration and regenerative changes. There was a very heavy infiltration of rather large pleomorphic epithelial cells showing no especial arrangement. A plain smear of the brownish, glazy, sticky, cystic content showed very plainly the brownish granules, branching filaments and spores typical of streptotrichosis, establishing the complete chain of the primary infection, the hematogenous or lymphogenous pulmonary involvement, and the metastatic subcutaneous abscess.

A word as to the treatment: Before the diagnosis of the fungous disease was established, the case was treated as are most influenzal pneumonias, with rest, nursing care, digitalis for cardiac stimulation, oxygen for the acute period to relieve the anoxemia, and attention to the general comfort and dietary needs of the patient. The troublesome hemoptysis was very strikingly controlled by the use of sodium citrate intramuscularly. When the fungus was recovered in the sputum, the measures generally recommended for its treatment were employed. Potassium iodide was used for several days early in the course of the disease to aid the nonproductive cough. When the diagnosis of streptotrichosis was established it was again given, with dosage as high as 200 grains (13 Gm.) a day. It had to be discontinued, however, after four days at the insistence of the patient, for whereas no change in the physical or clinical condition, or in the laboratory reports could be noted, there was distinct aggravation of the already troublesome cough with further exhaustion.

This appears to be the general experience in other reports, although in streptotrichosis of the skin potassium iodide seems to be more effective. Bötzel [9] has reported a case of streptothrix septicemia terminating favorably after the intravenous injection of 33 per cent ethyl alcohol. We could not see how the resulting weak dilution could have any effect on the streptothrix organism, especially when it is not affected by pure ethyl alcohol in vitro. Our patient received from 2 to 4 ounces (60 to 120 cc.) of whisky daily without noticeable effect. Several investigators, notably Petruschky [10] and Harbitz and Grondahl,[11] have reported good results with vaccine therapy. Unfortunately, our patient died before culture growths were sufficient for vaccine preparation. The only therapy that seemed to benefit the patient was attention to the general comfort and hygienic care. Once past the acute septic stage when she was at the mercy of the invading organism and the outlook was very grave, she showed excellent recuperative powers. We felt that she had a fair chance of recovery by simple attention to the ordinary measures of rest, diet and hygiene such as are employed in the treatment of any chronic pulmonary disease, notably tuberculosis, in addition to the attempt to establish proper drainage for the excessive bronchopulmonary secretion. For this purpose bronchoscopy was considered, but the necessity of its frequent employment precluded its use. When rest was sought by the use of sedatives, the resulting accumulation of secretion vitiated any temporary improvement. The patient did as well if not better when left alone. Only a favorable climatic interval gave the greatest benefit. Had our patient lived a short period longer and been able to make the journey to a warm dry climate, we feel she might have recovered sufficiently to enter a more or less chronic quiescent stage of the disease.

SUMMARY AND CONCLUSIONS

1. Streptotrichosis, in both acute and chronic forms, is probably more common than is generally believed.

2. The etiologic factor is a branching mold, very pleomorphic botanically, but showing a typical pathologic entity.

3. The chromogenic granules are so pathognomonic that their presence alone—easily detectable macroscopically—determines the diagnosis of this disease.

4. The case reported here shows the typical, clinical course of an acute pulmonary form of the disease which followed on the ulceration and removal of a chronic skin nodule of the same etiology.

5. The possibility of a relatively inocuous skin lesion harboring virulent micro-organisms should not be overlooked.

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9. Bötzel, A.: Ein mit Intravenösen Alkoholinjektionen behandelter und geheilter Fall von Streptothrixsepsis, Med. Klin. **27**: 207 (Feb. 6) 1931.

10. Petruschky: Demonstration von Preparaten und Kulturen von einen zweiten intra-vitam diagnostizierten Falle von Streptotrichosis hominis, Deutsche med. Wchnschr. **24**: 78 V, 1898.

11. Harbitz, F., and Grondahl, N. B.: Actinomycosis in Norway, Am. J. M. Sc. **142**: 386, 1911.

Clinical Notes, Suggestions and New Instruments

VISUALIZATION OF THE BILIARY SYSTEM BY FLUORESCENCE

RESULTS OF ANIMAL STUDIES FOLLOWING INTRAVENOUS INJECTION OF MERCUROCHROME-220 SOLUBLE OR DIRECT INJECTION OF THE DYE INTO THE GALLBLADDER

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The excretion of mercurochrome-220 soluble, following its intravenous administration by way of the biliary system, is well known. Its appearance in the gallbladder is prompt, occurring usually fifteen minutes after injection. According to Young, Hill and Scott,[1] after a single injection of 5 mg. of dye per kilogram of body weight, the dye is present in a concentration of from 1:5,000 to 1:50,000, as determined colorimetrically. Halpert and Hanke[2] noted a sharp initial rise in concentration of eosin or erythrosin, injected intravenously, even from 1:51 to 1:200, followed by a sharp decline. Bile examined was collected from the bile duct. The dye may be demonstrated in bile siphoned through a duodenal tube, even as late as from eighteen to twenty-four hours, though in diminished concentration. Tappiner (quoted by Kramer[3]) noted the biliary excretion of eosin, injected subcutaneously or intravenously, for seven days and the urinary excretion of eosin for fourteen days after injection. Clinically, 5 mg. of mercurochrome per kilogram of body weight has been injected in septicemia and in biliary disease to procure biliary antisepsis. Experiments in vivo have not succeeded as well as experiments in vitro, and no large use is accorded this method.

Possibly equally well known is the fact that eosin or mercurochrome, exposed to the action of filtered ultraviolet radiation (Wood's light), fluoresces a deep, rich, golden yellow. This filtered, invisible light is obtained by filtering out the visible light and the shorter wavelengths of ultraviolet radiation by means of a nickel oxide filter. The strongest spectral bands are in the region of 366 millimicrons.

When eosin or mercurochrome is injected into the blood stream of rabbits, either intravenously or intracardially, and the gallbladder, in the opened abdomen, is exposed to the action of filtered ultraviolet radiation, an immediate brilliant picture is seen. The entire biliary system is illuminated a deep golden yellow—the gallbladder, and its tributary hepatic and cystic ducts, and the common duct entering the duodenum at the ampulla. The system is laid bare to the eye as if it had been carefully dissected. Naturally, this procedure must be carried out in a dark room to allow for the full effect of fluorescence. The gradual excretion of the dye by way of the small intestine can be followed, by the downward progress of the fluorescent mass. The large intestine is less well illuminated. The surface of the kidneys is a speckled gold, and, after several hours, the ureters and, ultimately, the urinary bladder become outlined, though not distinctly.

This observation has been made on seven adult rabbits, in two of which mercurochrome was injected directly into the fundus of the gallbladder itself. In many cases, it may be preferable to inject the dye directly into the gallbladder and avoid the more circuitous method of intravenous injection. The advantages of this may be (1) the greater amount of dye which can be used, thereby increasing fluorescent vision, (2) the rapidity with which examination may be made, since it takes at least fifteen minutes for the dye to appear in the gallbladder after intravenous injection, and, too, in less concentration, and (3) the probable relative lack of danger, since proportionate amounts of mercurochrome in the blood stream might be toxic. The essential disadvantage is that the functional ability of the gallbladder to pick up the dye is not determined. This, however, can be obviated by the fact that any of the better known methods of liver and gallbladder function can be used. An intraperitoneal injection of the dye did not reveal the presence of the dye either in the peritoneal cavity or in the biliary tract. Subcutaneous injection of eosin (Kramer) apparently does not show up the gallbladder as well. Unfortunately, Kramer[3] examined his animals twenty-four and forty-eight hours after injection, at a period too late to demonstrate the biliary tracts.

Tetiothalein sodium does not fluoresce under the action of filtered ultraviolet radiation and was therefore not demonstrable in the one rabbit in which it was used. Phenolsulphonphthalein also does not fluoresce and was not demonstrated in its passage through the ureters. Indigo carmine fluoresces a deep black but was not seen in the ureters; when injected directly into the small intestine of the rabbit, its course down the intestine was followed. It would be a valuable adjunct to surgery of the ureters to find a dye that has a strong fluorescence and that is quickly and strongly eliminated by the kidneys. Whether retrograde injection is feasible is as yet undetermined.

The value of these observations is evident in demonstrating the function and the pathologic changes, especially operative, of the biliary tract, as in obstruction and anastomosis. A simple instrument for use in the operating room can be easily devised as a portable source of ultraviolet radiation for intra-abdominal visualization. In this respect, the work of Havlicek[4] is interesting, in that he has begun the use of filtered, ultraviolet radiation in abdominal surgery, with excellent diagnostic results.

1919 Madison Avenue.

From the Laboratory Division of the Hospital for Joint Diseases.
Aided by a Grant from the Committee on Scientific Research of the American Medical Association.

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THE RECOGNITION OF COARCTATION OF THE AORTA

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There are some etiologic backgrounds for heart disease which the physician must bear in mind because they are so amenable to treatment. Thus, hyperthyroidism in cardiac patients should never be overlooked because successful therapy of the endocrine disturbance so greatly improves the cardiac condition. But there are other etiologic factors which it is almost as important to recognize for the opposite reason; namely, because they are confused with a disorder for which some therapeutic regimen is often recommended. Correct diagnosis would obviate useless treatment. Stenosis of the aortic isthmus (coarctation of the aorta) is a rare disease, but numerous people with it are now being treated for hypertension and being put to unneeded expense and worry in order to rule out renal disease or to carry out some scheme of life designed to lessen metabolic or psychic stress. In those cases of coarctation which are of physiologic importance, the diagnosis is so readily and surely made by simple physical examination that there should be no excuse for their being subjected to special diagnostic tests or some rigorous therapeutic procedure to lower blood pressure.

There have recently appeared a number of excellent reviews of the clinical,[1] physiologic[2] and radiologic[3] features of aortic coarctation, but they do not stress the signs which awaken in the examining physician a suspicion of this disorder, or the test by which the suspicion can quickly be confirmed or disproved.

Coarctation of the aorta is characterized anatomically by a complete or nearly complete obstruction of the aorta, just distal to the left subclavian artery, due to congenital abnormality of the tissues in the region of the junction of the aorta and the ductus arteriosus. In adult life this leads to a remarkably developed collateral circulation to supply the lower half of the trunk and lower extremities. The chief anastomoses are those involving intercostal arteries, mammary and epigastric arteries, and the vessels about the clavicles and scapulae. The condition

From the Department of Medicine, Stanford University School of Medicine.

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often causes no symptoms until late in life, but heart failure, intermittent claudication and general weakness are frequently encountered in the older subjects, aortic insufficiency occurs in about one out of four cases, and arterial hypertension in the arms is regularly present.

REPORT OF CASES

The following case histories illustrate the chief clinical features of this condition:

CASE 1.—A Greek, aged 45, complained of indigestion. He was sent in for further study because of hypertension, systolic 190, diastolic 100, and such marked prominence and heaving pulsation of the innominate and carotid vessels as to suggest aneurysm. The Wassermann reaction was negative, the heart somewhat enlarged and many ribs were "scalloped" by erosion of their lower borders.[4] No pulsations were noted in the subcutaneous tissue of the chest, and the diagnosis of multiple aneurysms of intercostal vessels and innominate artery was made. Several months later the possibility of coarctation was thought of; he returned for examination and the collateral vessels in the supraclavicular and interscapular region were noted as tortuous pulsating vessels. The feeble delayed femoral pulse was also present, thus establishing the diagnosis of coarctation of the aorta.

CASE 2.—An Armenian, aged 37, was nervous and found to be suffering from hypertension. He had thorough physical and roentgenographic examinations, and a large heart was noted. For several years he was treated for hypertension, with a salt free diet and change of residence and of occupation as part of the regimen. When he returned to a colder climate he was troubled by a dry brassy cough and by weakness, especially of the legs. Warmth seemed to diminish his discomfort. At this time the bulging slow pulsation of the carotid vessels was noted, and the delayed femoral pulse and collateral vessels in the thorax were sought and easily demonstrated. Although he had some rib erosion, the anteroposterior chest silhouette showed a large aortic knob to the left of the sternum. The aorta below this prominence could not be demonstrated in lateral or oblique views.

CASE 3.—A Russian, aged 25, came to the clinic four years ago because of palpitation and hemoptysis. An aortic insufficiency with cardiac hypertrophy and blood pressure of 215 systolic, 85 diastolic, was found. At this time he still enjoyed vigorous exercise (soccer) but gradually palpitation and dyspnea on effort limited his activity. He still is in good general physical condition and has little discomfort from moderate exertion. The heaving pulsation and marked prominence of the neck vessels finally attracted attention; tortuous pulsating vessels in the interscapular region, and delayed feeble femoral pulse were found. The old roentgenogram showed a heart and great vessel shadow typical of coarctation of the aorta, as well as several rib erosions.

COMMENT

Experience has shown that the pulsation, thrills and murmurs from collateral arterial channels under the skin of the thorax will be overlooked by almost all physicians in a careful routine examination and that erosion of the ribs or changes in the cardiac silhouette due to coarctation of the aorta will be overlooked by most radiologists. On the other hand, in this clinic the x-ray department has found silhouettes typical of coarctation in patients with normal blood pressure, no rib erosion, and no other evidence of this anomaly. The recognition of this condition will be based not on radiologic evidence, because the silhouette is not pathognomonic and rib erosion may be absent and is easily missed unless the radiologist is asked to look for it. This condition should be suspected in patients, particularly young or middle-aged men with hypertension, or hypertension and aortic insufficiency, who have marked carotid arterial pulses, easily visible and rather slowly collapsing. The diagnosis is easily confirmed by simultaneous palpation of the femoral and the radial pulse, for the femoral pulse is not only markedly delayed but is wholly different in quality from that in the arms and neck. The difference in time and in character of the pulse felt by the hand on the femoral artery from that felt with the other hand on the radial artery furnished one of the most interesting of all physical signs. Collateral vessels under the skin of the interscapular region, or causing eroded ribs, and changes in the cardiac silhouette are interesting but less easily demonstrated or not regularly present signs of this condition. Collateral vessels in the back may be easily found when the patient is warm and active but are almost imperceptible when he is cool and in the basal state. The quick recognition of coarctation of the aorta saves the patient the inconvenience of the more elaborate diagnostic studies or therapeutic procedures often advised in cases of unexplained hypertension.

4. Railsback, O. C., and Dock, William: Erosion of Ribs Due to Stenosis of the Isthmus (Coarctation) of the Aorta, Radiology **12**: 58 (Jan.) 1929.

SUMMARY

Coarctation of the aorta is an uncommon vascular anomaly usually incorrectly diagnosed hypertensive heart disease. The physical features make its recognition certain merely by inspection and palpation. It is important that physicians bear in mind such easily diagnosed, though rare, conditions in order to spare those who have them from unnecessary diagnostic and therapeutic procedures. The difference in quality and time of arrival of radial and femoral pulses in cases of coarctation of the aorta provides an easy and reliable diagnostic test for this condition.

WASP STING OF THE CORNEA

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Wasp stings of the cornea are not of common occurrence. The American literature on this subject is relatively meager. The article by Yoshida,[1] translated by S. R. Gifford, is perhaps the most complete. The foreign literature contains more reference to this subject, though it is by no means voluminous.

Lewin and Guillery[2] and Zander and Geissler[3] state that wasp stings of the cornea are more dangerous than those of the bee. Cases of death within ten minutes following the sting of the wasp have been reported. Kraupa[4] concludes that there must be a chemical difference in the toxins formed by the two insects. Bee stings of the cornea, with case reports, have recently been reviewed by Young.[5]

The changes described in wasp stings of the cornea consist in the following points: There is a loss of corneal epithelium at the point of injury, surrounded by a diffuse, grayish, parenchymatous opacity, which may involve the entire cornea. Vesicle formation has been reported in some cases. The cornea is usually insensitive, the pupil dilated. A striate lattice-like opacity has been noted in some cases and was present in the case reported here. Discoloration of the iris, ranging from blue to green has been one of the common changes noted. Among the complications that have occurred are hypopyon, clouding of the lens, acute glaucoma and cataract formation. The wasp does not deposit a lancet or sting in the tissue, as does the bee, and consequently there is no foreign body to be removed.

REPORT OF CASE

A man, aged 26, was cutting timber, May 21, 1931, when a wasp flew under his spectacles and stung his right eye. He had previously lost all useful vision in his left eye following a penetrating injury of the globe in 1928. He stated that the left eye had been operated on twice for cataract without success.

Vision in the right eye was 20/40. The lids did not show any swelling or injection. There was a marked injection of the bulbar conjunctiva. The cornea was insensitive. At a point 3 mm. below the exact center of the cornea there was an opaque area 3 mm. in diameter. The anterior surface of this area stained when fluorescein was applied. The depth of the anterior chamber was normal. The pupil was dilated. The iris, lens, media, retina and disk did not show any departure from the normal. Vision of the left eye was restricted to light perception and projection only. A large piece of capsular material was attached to the posterior surface of the iris, practically occluding the pupil.

The patient was admitted to the hospital the same day and treatment, consisting of the instillation of atropine and of

1. Yoshida, Y.: Wasp Sting Keratitis with Special Color Changes in Iris, Am. J. Ophth. **3**: 493 (July) 1920.
2. Lewin and Guillery: Die Wirkungen von Arzneimitteln und Giften aus das Auge **1**: 783, 1904.
3. Zander and Geissler: Die Verletzungen des Auges, 1864, p. 520.
4. Kraupa, E.: Erosio Corneae durch Einem Wespenstachel in Lide, Centralbl. f. prakt. Augenh. **35**: 321, 1911.
5. Young, C. A.: Bee Sting of Cornea, Am. J. Ophth. **14**: 208 (March) 1931.

ethylmorphine hydrochloride, with the use of hot applications, was instituted. On the following day the peculiar lattice-like opacity of the cornea was noted, most marked at the center of the cornea and fading toward the periphery. The patient remained in the hospital one week. At the end of that time the intense reaction had subsided, the eroded area had healed, and the striate opacity had disappeared. Fortunately none of the complications mentioned appeared. When last seen, July 28, 1931, a small opaque area approximately 1 mm. in diameter was present below the exact center of the cornea. This did not interfere with central vision for distance, though it did impair near vision to some extent. A plus 0.50 cylinder axis 65 gave vision of 20/40 plus 3.

COMMENT

Greenwood[6] describes a series of cases of lattice keratitis occurring in one family. His description of this condition approximates closely the lattice-like appearance of the cornea seen in this case of wasp sting. Kraupa[7] believes that these cases of familial lattice keratitis are of a neurotropic character. It might be speculated that the action of the toxin injected by the wasp causes changes of a neurotropic nature with the resulting formation of the lattice-like opacities.

IMPROVED TECHNIC OF TUBAL RESECTION

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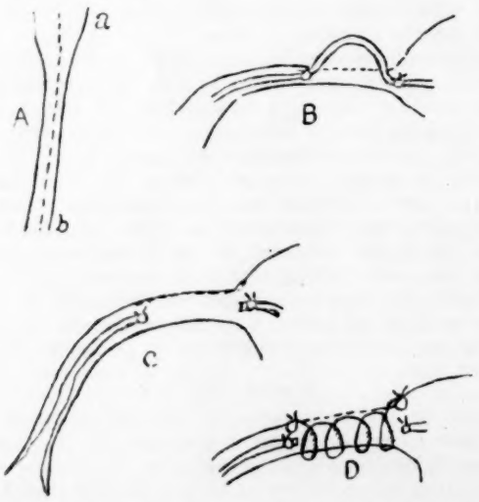
Having been impressed by the many warnings in the literature with citations of the failures in the ordinarily accepted methods of sterilization of the female, and having had such an experience in my own work, I have attempted to improve the technic of tubal resection.

Bearing in mind the tendency to reanastomosis, I have resected and ligated by subserous dissection, with the result



Improved technic of tubal resection: *A*, slitting of serosa; *a*, cornu; *b*, distal portion; *B*, denuded section of the tube lifted from bed; *C*, each end ligated, intervening portion resected; *D*, broad ligament closed.

that the ligated ends are buried in their natural beds with a bridge of broad ligament connective tissue intervening. The technic is as follows:

Beginning over the uterine cornu, the serosa is slit with a knife along the upper surface of the tube for about 4 cm. (*A*, in diagram). By blunt dissection, perhaps better accomplished with very small blunt scissors or mosquito forceps, the denuded section of tube is lifted from its bed (*B*). Each end is then ligated with linen and the intervening portion resected (*C*), particular care being taken to ligate the proximal portion as deeply in its uterine bed as possible.

Finally, the broad ligament is closed over the tube stumps and in the intervening space by a running whip or chain stitch of linen (*D*).

I offer this technic as one of efficiency and not of easy performance.

It should attain the following advantages:

Prevention of endometriosis.
Prevention of reanastomosis.
Prevention of adhesions.
Undisturbed anatomic relations.

603 Hume-Mansur Building.

6. Greenwood, Allen: Lattice Keratitis, Tr. Am. Acad. Ophth. & Otolaryng., 1930, p. 248.
7. Kraupa: Klin. Monatsbl. f. Augenh. **69**: 396, 1922, cited by Greenwood.

Council on Physical Therapy

THE COUNCIL ON PHARMACY AND CHEMISTRY AND THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAVE AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.

P. N. LEECH, Secretary,
Council on Pharmacy and Chemistry.

H. A. CARTER, Secretary,
Council on Physical Therapy.

OXYGEN THERAPY

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Priestley, in 1744, isolated in pure form a gas which he called "dephlogisticated air," which was respirable and was later called oxygen. Lavoisier, in 1777, showed that oxygen combined with carbon to form carbonic acid gas, that the latter was given off in the expired air, that the former was necessary for maintenance of life, and thereby he founded the science of metabolism. Miller[1] has given an interesting account of the first therapeutic use by Thomas Beddoes in 1798 of the then newly discovered gases oxygen and nitrous oxide.

The modern scientific interest in the therapeutic value of oxygen may be said to date from the impetus given to its use by the work of Haldane in the successful treatment on a large scale of the pulmonary edema and pneumonia developing in soldiers from exposure to war gases. Even under the difficulties of field work it was demonstrated that marked benefit could be obtained from the proper or, rather, adequate administration of oxygen by means of a simple form of apparatus which Haldane devised for the purpose. In England, oxygen chambers were constructed at Cambridge by Barcroft, Hunt and Dufton,[2] mainly for physiologic investigations on the deleterious effects of low concentrations of oxygen on normal subjects, and to study the after-effects of "gassing" on soldiers. Clinical investigations in a similar chamber constructed at Guy's Hospital, London, have been reported by Campbell and Poulton,[3] who were also particularly interested in the physiologic phases of the problem.

In America, interest in oxygen therapy was stimulated by the construction at the Rockefeller Hospital, by Stadie,[4] of an oxygen chamber, which was later

From the Section on Clinical Metabolism, the Mayo Clinic.

1. Miller, A. H.: The Pneumatic Institution of Thomas Beddoes at Clifton, 1798, Ann. Med. History, n. s. **3**: 253-260 (May) 1931.
2. Barcroft, Joseph; Hunt, G. H., and Dufton, Dorothy: The Treatment of Chronic Cases of Gas Poisoning by Continuous Oxygen Administration in Chambers, Quart. J. Med. **13**: 179-200 (Jan.) 1920.
3. Campbell, J. M. H.; Hunt, G. H., and Poulton, E. P.: Examination of Blood Gases and Respiration in Disease, with Reference to Cause of Breathlessness and Cyanosis, J. Path. & Bact. **26**: 234-296 (April) 1923. Campbell, J. M. H., and Poulton, E. P.: The Effect of Exercise on the Pulmonary Ventilation and Rate and Depth of Breathing in Chronic Bronchitis in Oxygen Treatment, Quart. J. Med. **20**: 27-68 (Oct.) 1926. Campbell, J. M. H., and Poulton, E. P.: The Effect on Breathless Subjects of Residence in Our Oxygen Chamber: Description of Chamber at Guy's Hospital, ibid. **20**: 141-172 (Jan.) 1926.
4. Stadie, W. C.: Construction of an Oxygen Chamber for the Treatment of Pneumonia, J. Exper. Med. **35**: 323-335 (March) 1922.

rebuilt by Binger.[5] They [6] showed that in some of their severe cases of pneumonia, with cyanosis, oxygen was undoubtedly life saving. The work was continued by Means and Barach [7] and by Barach and Woodwell [8] at the Massachusetts General Hospital in Boston. Barach and Binger [9] further modified the Roth [10] tent, which by the introduction of a cooling system was, in turn, an improvement of the tent method of administration of oxygen probably first suggested by Leonard Hill.[11] Barach [12] also devised a relatively inexpensive oxygen chamber for the Presbyterian Hospital in New York. The chambers at Rochester, Minn., were completed in January, 1926, and have been in continuous use since then, chiefly for the treatment of postoperative bronchopneumonia.[13] We have also made extensive use of oxygen tents and have found that even the earlier models were efficient and comfortable; during the last year many of the tent manufacturers have brought out new models, some of which embrace such marked improvements that little is left to be desired, from the point of view either of efficiency or of comfort, and some are almost as good as a chamber.

Excellent summaries of the physiologic principles on which oxygen therapy is based have been made by Haldane,[14] by Lundsgaard and Van Slyke,[15] by Barcroft,[16] by Meakins and Davies,[17] and by Peters and Van Slyke; [18] extensive bibliographies are given in these reviews. Within the limits of this article it is impossible to do more than present in didactic form a few of the various facts that seem of most importance for the practical use of oxygen therapy. On account of this limitation the reader is referred to these other reviews for a more critical analysis of the underlying physiology.

Approximately one fifth (20.93 per cent) of normal air is oxygen and the rest nitrogen (79.04 per cent) and a small amount of carbon dioxide (0.03 per cent) with traces of rare gases; the percentage composition of outdoor air is constant, whether at the seashore or in the mountains. The utilization of oxygen for the normal process of metabolism takes place in the various cells of the body to which it is transported by the hemoglobin of the circulating blood. This blood has obtained its supply of oxygen from the air in the lungs, which in turn is being constantly replaced by the act of respiration. To live, the cells of the body must not only receive the quantity of oxygen they need but, in order to utilize it properly, must receive it at a sufficiently high pressure; if it is delivered to them at too low a pressure, very serious harmful effects are produced. This condition in clinical literature is known as anoxemia; in the physiologic literature the more accurate term anoxia has been introduced recently. Anoxemia is that condition in which the free oxygen in the blood plasma in the systemic capillaries is abnormally diminished. According to Henry's law, the amount of free gas in a solution will vary according to the partial pressure of that gas; therefore, anoxemia means that the cells in the tissues are receiving their supply of oxygen at an abnormally low pressure. Since the basal metabolism or, rather, the basal oxygen consumption of a person with anoxemia is not decreased, the total amount of oxygen consumed by each cell is not measurably altered. Although intermediate products of metabolism may gradually accumulate, the ill effects are primarily due to the low pressure of free oxygen in the capillary blood to which the cells of the body are exposed, resulting in a disturbance of the metabolic processes. In this sense, the use of the phrase "oxygen want" is appropriate.

At sea level, the weight or pressure of the atmosphere, measured by the barometer, averages 760 mm., or 30 inches; therefore the partial pressure exerted by the oxygen (neglecting a varying small amount of water vapor) is about 160 mm. (760 × 21 per cent). In high altitudes the pressure of the atmosphere is much less; at an altitude of 10,000 feet it would be about 550 mm., and the pressure exerted by the oxygen would be correspondingly reduced to 116 mm. (550 × 21 per cent) because the percentage composition of the air is the same. A simple example of anoxemia is the mountain sickness experienced by many normal persons on going high into the mountains and is the result of the decreased oxygen pressure in the inspired air, which incompletely saturates the hemoglobin, and this in turn causes a corresponding decrease in the pressure of the oxygen which is delivered to the cells of the body by the blood stream. To meet this difficulty the healthy body is gradually able, in several different and most interesting ways, to compensate for this decrease in oxygen tension of the inspired air, and after several days or weeks the subject becomes more or less acclimatized.[19] Any one who has experienced mountain sickness, for instance on Pike's Peak in the Rocky Mountains or in an airplane, understands the severity of these symptoms and realizes that the superimposition of such symptoms on a patient otherwise severely ill, as in pneumonia, is a condition to be avoided if possible. The patient has neither the time nor the ability to compensate for acute

5. Binger, C. A. L.: The Construction and Management of an Oxygen Chamber, Mod. Hosp. **24**: 186-194 (Feb.) 1925.

6. (*a*) Binger, C. A. L.: Therapeutic Value of Oxygen in Pneumonia, New York State J. Med. **25**: 953-958 (Oct. 15) 1925; (*b*) General Considerations in Regard to Oxygen Therapy, Tr. A. Am. Phys. **42**: 300-302, 1927; (*c*) Anoxemia in Pneumonia and Its Relief by Oxygen Inhalation, J. Clin. Investigation **6**: 203-219 (Oct.) 1928. (*d*) Binger, C. A. L.; Brow, G. R., and Branch, Arnold: Experimental Studies on Rapid Breathing: Tachypnea, Independent of Anoxemia, Resulting from Multiple Emboli in the Pulmonary Arterioles and Capillaries, ibid. **1**: 127-153 (Dec.) 1924; II. Tachypnea Dependent upon Anoxemia, Resulting from Multiple Emboli in the Larger Branches of the Pulmonary Artery, ibid., pp. 155-180. (*e*) Binger, C. A. L., and Davis, J. S., Jr.: The Relation of Anoxemia to the Type of Breathing in Pneumonia, ibid. **6**: 171-185 (Oct.) 1928. (*f*) Stadie, W. C.: The Oxygen of the Arterial and Venous Blood in Pneumonia and Its Relation to Cyanosis, J. Exper. Med. **30**: 215-240 (Sept.) 1919; (*g*) The Treatment of Anoxemia in Pneumonia in an Oxygen Chamber, ibid. **35**: 337-360 (March) 1922.

7. Means, J. H., and Barach, A. L.: The Symptomatic Treatment of Pneumonia, J. A. M. A. **77**: 1217-1223 (Oct. 15) 1921.

8. Barach, A. L., and Woodwell, M. N.: Studies in Oxygen Therapy with Determination of the Blood Gases: 1. In Cardiac Insufficiency and Related Conditions, Arch. Int. Med. **28**: 367-393 (Oct.) 1921; 2. In Pneumonia and Its Complications, ibid., pp. 394-420.

9. Barach, A. L., and Binger, C. A. L.: A Portable Oxygen Tent, J. A. M. A. **85**: 190-192 (July 18) 1925. Barach, A. L.: A New Oxygen Tent, J. A. M. A. **87**: 1213-1214 (Oct. 9) 1926.

10. Roth, Paul: Improved Apparatus for the Therapeutic Administration of Oxygen, Mod. Hosp. **22**: 404-405 (April) 1924.

11. Hill, Leonard: A Simple Oxygen Bed Tent and Its Use in a Case of Edema and Chronic Ulcer of Leg, J. Physiol. (Proc. Physiol. Soc.) **55**: xx-xxi, 1921.

12. (*a*) Barach, A. L.: Methods and Results of Oxygen Treatment in Pneumonia, Arch. Int. Med. **37**: 186-211 (Feb.) 1926; (*b*) A New Type of Oxygen Chamber, J. Clin. Investigation **2**: 463-476 (Aug.) 1926; (*c*) Acute Disturbance of Lung Function in Pneumonia, J. A. M. A. **89**: 1865-1868 (Nov. 26) 1927; (*d*) Oxygen Therapy in Pneumonia, New York State J. Med. **29**: 985-995 (Aug. 15) 1929.

13. (*a*) Boothby, W. M., and Haines, S. F.: Oxygen Therapy, J. A. M. A. **90**: 372-376 (Feb. 4) 1928. (*b*) Haines, S. F., and Boothby, W. M.: The Value of Oxygen Treatment After Thyroidectomy, Am. J. Surg. **6**: 1-6 (Jan.) 1929; (*c*) Oxygen Treatment, ibid. **7**: 174-180 (Aug.) 1929.

14. (*a*) Haldane, J. S.: Anoxemia, or Oxygen Deficiency and Abnormal Respiration in Certain Diseases, J. A. M. A. **73**: 768 (Sept. 6) 1919; (*b*) Respiration, Hartford, Conn., Yale University Press, 1922.

15. Lundsgaard, Christen, and Van Slyke, D. D.: Cyanosis, Medicine **2**: 1-76 (Feb.) 1923.

16. (*a*) Barcroft, Joseph: Anoxemia, Lancet **2**: 485-489 (Sept. 4) 1920; (*b*) The Significance of Hemoglobin, Physiol. Rev. **4**: 329-351 (July) 1924.

17. Meakins, J. C., and Davies, H. W.: Respiratory Function in Disease, London, Oliver and Boyd, 1925.

18. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1931, chapter XII, Hemoglobin and Oxygen **1**: 518-652.

19. (*a*) Douglas, C. G.; Haldane, J. S.; Henderson, Yandell, and Schneider, E. C.: Physiological Observations Made on Pike's Peak with Special Reference to Adaptation to Low Barometric Pressures, Phil. Tr. Roy. Soc. London, ser. B. **203**: 185-318, 1912. (*b*) Haldane, J. S.: Acclimatisation to High Altitudes, Physiol. Rev. **7**: 363-384 (July) 1927.

anoxemia; oxygen therapy is therefore of great practical benefit in those diseases associated with acute anoxemia, or oxygen want.

Douglas and Priestley [20] have emphasized a fact which from the clinical point of view is of great importance; namely, that some persons are extremely sensitive to even a slight degree of oxygen deficiency; this is illustrated by the well known variation in the susceptibility of different persons to the mountain sickness referred to in the preceding paragraph. Patients with hyperthyroidism may have anoxemia more easily and suffer serious consequences more frequently, because of the increased consumption of oxygen, in the same way that a person not acclimatized may be suddenly precipitated into a most serious condition by exertion in the low oxygen tension of high altitudes. In fact, Asher and Duran [21] found this to be true in rats that were made hyperthyroid by the administration of thyroid extract; conversely, Asher and Streuli [22] found that rats in which thyroid glands had been removed, with resultant decrease in consumption of oxygen, withstood an anoxemia produced by oxygen tension in the inspired air better than normal animals.

It is obvious that any clinical condition which causes anoxemia will be less well borne in high altitudes than at sea level,[19a] and, for example, that a less intense degree of pulmonary edema or pneumonia will cause more serious anoxemia in the mountains than near the coast. This is the explanation for the common practice of immediately sending patients who have pneumonia in the mining villages that are high up in the mountains down to lower levels as quickly as possible. Likewise, in the high altitudes a higher concentration of oxygen will sometimes be necessary in the oxygen tents or chambers than at sea level to obtain the same beneficial effect, although in a fully acclimatized subject the increase possibly need not be such as to provide as high a tension of oxygen in the capillaries as at sea level. For example, at sea level the usual concentration of oxygen used in oxygen tents and chambers is 50 per cent, which (neglecting water vapor) is equivalent to an oxygen pressure of 380 mm. (760 × 50 per cent); at an altitude of 10,000 feet, having an average barometric reading of 550 mm., the concentration of oxygen would have to be around 70 per cent (380 ÷ 550 = 69 per cent) to obtain approximately the same oxygen pressure in the inspired air. After such use of oxygen at high altitudes, it is quite likely that if maintained long a previously acclimatized subject will in part lose his adaptation to the altitude and will experience more or less mountain sickness on removal from the oxygen chamber or tent; if so, it may be necessary under these conditions to reduce the percentage gradually and continue the oxygen a few days longer than usual at a concentration around 30 per cent.

With the rapid introduction of the airplane as a means of general transportation, susceptible passengers may frequently experience this mountain sickness. In fact, it is probable that the nausea and vomiting experienced by many such passengers is more truly a "mountain sickness" due to anoxemia than a "sea sickness" due to motion, although both factors are often concerned. This possibility should be borne in mind especially when a plane is used as an ambulance for the transportation of a seriously ill person. Such air ambulances should, whenever possible, have apparatus available for administration of oxygen. Pilots should be instructed to avoid an unnecessary elevation and should be informed that many patients could be very seriously affected by an elevation which was insufficient to cause the pilots the slightest inconvenience; occasional patients with certain types of cardiac or pulmonary disease might die merely as the result of the sudden elevation.

While under many conditions the degree of anoxemia is parallel to the degree of cyanosis,[6f] this relationship by no means always holds.[15] The dissociation curve of hemoglobin is greatly affected by the partial pressure of carbon dioxide and also by the presence of various concentrations of salts, so that, with an increased concentration of carbon dioxide in the tissues, as in cyanosis predominantly due to stasis, the hemoglobin will give off the same amount of its oxygen with a less decrease in oxygen pressure,[23] which, in part, accounts for the less harmful effect caused by this type of cyanosis. Furthermore, the intensity [24] of the bluish color is dependent on the quantity of blood or, more strictly speaking, of hemoglobin in the capillaries of the skin as well as on the character and complexion of the skin. If the capillaries contain little blood or little hemoglobin, as often occurs in patients with anemia or in surgical shock with or without actual hemorrhage, the amount of reduced hemoglobin may not be sufficient, even if the anoxemia is serious, to give a definite cyanotic or bluish effect, but rather an ashen gray color which often merely brings out the remark that "the patient looks bad."

The most frequent clinical conditions [14a] which cause anoxemia, and therefore require oxygen therapy, are pulmonary edema and pneumonia. Although both these conditions, as is generally known, develop spontaneously in healthy people, they are also of even more frequent occurrence following major surgical operations.[25] Therefore, a very big field for oxygen therapy, in addition to treating patients with spontaneous pneumonia, is the treatment of patients with postoperative pulmonary complications. The latter group of patients responds especially well to oxygen therapy because, as a rule, the virulence of the infecting organism is less and the actual effect of the anoxemia itself is the chief harmful factor superimposed on a patient attempting to survive a serious surgical procedure. In spontaneous pneumonia, especially lobar pneumonia, on the contrary the dominating factor in the disease is the virulence of the organism.

Pulmonary edema is one of the earliest and most frequent causes of anoxemia, and, unless controlled, usually progresses into frank bronchopneumonia. Auer and Gates,[26] and Loeb,[27] in their studies of the causes of

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26. Auer, J., and Gates, F. L.: Experiments on the Causation and Amelioration of Adrenalin Pulmonary Oedema, J. Exper. Med. **26**: 201-220 (Aug.) 1917.

27. Loeb, Leo: The Mechanism in the Development of Pulmonary Oedema, Proc. Soc. Exper. Biol. & Med. **25**: 321-323 (Feb.) 1928.

pulmonary edema in rabbits following intratracheal administration of epinephrine, found that this type of edema could be prevented by any method that diminished the increased negative intrapulmonary pressure (as would occur from obstruction to the airway) caused by administration of the drug. Loeb emphasized that the more intense the inspiratory movements, the greater the tendency to withdrawal of fluid from the blood, a tendency which would be favored, as pointed out by Johnson,[28] by overdistention of the pulmonary vessels from temporary incoordination of the volume output of the right and left ventricles (Welch,[29] Meltzer [30]). Following thyroidectomy,[13a] or any other major operation in the neighborhood of the upper part of the respiratory tract, partial obstruction of the trachea or upper part of the airway is not an uncommon occurrence as the result of excessive mucus, with or without laryngeal spasm and edema; such obstruction would cause an increase in intrapulmonary negative pressure, which in turn would favor the production of pulmonary edema. Therefore, if patients have had operations on the upper part of the respiratory tract, administration of oxygen is clearly indicated whenever there is the slightest degree of tracheal obstruction. In order to keep the volume of respiration and, therefore, the amount of air passing through the obstructed airway as low as possible, particular pains should be exercised to keep the concentration of carbon dioxide below 1 per cent in this type of case. Cardiac disturbances also are often materially aggravated following thyroidectomy in cases of hyperthyroidism, and whereas these disturbances are, as a rule, not apparently serious in themselves, they, together with impeded inspiration, may readily be contributing factors to the production of pulmonary edema, and also may superimpose an anoxemia due to stasis of the peripheral circulation in addition to the anoxemia caused by the incomplete saturation of the blood in the lungs.

Why pulmonary edema and pneumonia, especially the disseminated or bronchial type, are such important factors [31] in causation of serious anoxemia can perhaps be rendered clear by a brief review of the chief anatomic characteristics of the pulmonary air passages and alveoli. Miller [32] showed that the ordinary fine bronchi divide into "respiratory bronchi" and these in turn into "alveolar ducts," both of which are partly lined with alveolar epithelium; the alveolar ducts open into distributing chambers, called atria, from which arise several "air sacs." Although the greater part of the alveoli correspond to the air sac system and are reached last by the air current, a certain proportion of the alveolar type of epithelium, with its capillary supply, lines the smaller air passages. It is evident, therefore, that the blood circulating in the close network of capillaries behind the alveolar epithelium lining the air passages will be better aerated than that circulating behind the epithelium lining the deeper air sacs. The development of slight edema in the walls of either the very fine ducts or the alveoli, even before there is any excretion of fluid into the bronchial or alveolar spaces, will narrow the lumen and thereby impede the passage of air into and out of the deeper air sacs, as well as decrease the rapidity of diffusion of oxygen through the alveolar and capillary walls for oxygenation of the hemoglobin. As edema increases and there is exudation into the alveolar spaces and bronchi, the diffusion of oxygen inward encounters still further difficulty, and many large groups of air sacs are less efficiently aerated, with the production of more or less sizable regions of atelectasis. In the early stages of pneumonia, before consolidation takes place, the usual amount of blood will pass through the capillaries of the imperfectly aerated alveoli, greatly reducing the average oxygen saturation of the arterial blood. After the process has proceeded further, the pressure of the exuded fluid and, still later, consolidation, will compress the capillaries and greatly decrease or, in the stage of consolidation, almost abolish the flow of blood through the unaerated alveoli, and therefore the average arterial blood will be less desaturated than in the earlier stages. As pointed out by Meakins,[33] this progressive decrease in the blood supply to the unaerated alveoli accounts for the interesting clinical observation that frequently the degree of cyanosis in lobar pneumonia becomes less marked as consolidation increases.

Consideration of these facts, in conjunction with a study of the blood dissociation curves of oxygen and carbon dioxide [34] and the mechanism of the regulation of respiration, the details of which must be passed over here, shows that the anatomic features described do not materially decrease the elimination of the carbon dioxide but do greatly decrease the average oxygen saturation of the hemoglobin. In fact, the rapid, shallow breathing [35] in some of these cases may even wash out an excess of carbon dioxide and at the same time imperfectly aerate the deeper alveoli and thus fail to oxygenate the blood flowing through the lower portion of the lung.

Stadie [6f] had shown that cyanosis of the finger nails and lips that can just be detected corresponds, under usual conditions, to approximately 10 per cent oxygen desaturation. When cyanosis is definite the blood will be approximately 15 per cent desaturated, and when it is marked the blood will be more than 20 per cent desaturated. However, in judging the intensity of the anoxemia the clinician must be on guard not to overlook the serious significance,[14] even when apparently slight, of the steel or ashen gray type of cyanosis that occurs in cases in which the quantity of blood in the peripheral circulation is decreased, as in surgical shock and collapse, or in which the hemoglobin itself is reduced, as in anemia or following hemorrhage. The clinical recognition of slight degrees of cyanosis is often aided by having the patient sit up in bed,[13a] as this exertion increases the oxygen utilization and therefore the venous desaturation. Likewise, the cyanosis may be intermittent, especially if the patient is drowsy. Often it is present sufficiently only to be recognized during sleep, particularly in cases of disturbance of innervation

28. Johnson, S.: Experimental Production and Prevention of Acute Edema of the Lungs of Rabbits, Proc. Soc. Exper. Biol. & Med. **25**: 181-182 (Dec.) 1927.

29. Welch, W. H.: Zur Pathologie des Lungenödems, Virchows Arch. f. path. Anat. **72**: 375-412 (March 5) 1878.

30. Meltzer, S. J.: Edema: A Consideration of the Physiologic and Pathologic Factors Concerned in Its Foundation, Am. Med. **8**: 191-199 (July 30) 1904.

31. Barcroft, Joseph; Cooke, A.; Hartridge, H.; Parsons, T. R., and Parsons, W.: The Flow of Oxygen Through the Pulmonary Epithelium, J. Physiol. **53**: 450-472 (May 18) 1920. Haldane.[14b]

32. Miller, W. S.: The Structure of the Lung, J. Morphol. **8**: 165-188 (April) 1893; The Air Spaces in the Lung of the Cat, ibid. **24**: 459-486 (Dec.) 1913.

33. Meakins, Jonathan: Oxygen-Want: Its Causes, Signs and Treatment, Edinburgh M. J. **29**: 142-161, 1922.

34. Barcroft.[22b] Barcroft, Joseph; Binger, C. A. L.; Bock, A. V.; Doggart, J. H.; Forbes, H. S.; Harrop, G.; Meakins, J. C., and Redfield, A. C.: Observations upon the Effect of High Altitude on the Physiological Processes of the Human Body, Carried Out in the Peruvian Andes, Chiefly at Cerro de Pasco, Phil. Tr. Roy. Soc. London, ser. B. **211**: 351-464, 1922. Henderson, L. J.: Blood: A Study on General Physiology, New Haven, Conn., Yale University Press, 1928. Meakins, Jonathan: Observations on Gases in Human Arterial Blood in Certain Pathological Pulmonary Conditions and Their Treatment with Oxygen, J. Path. & Bact. **24**: 79-90 (Jan.) 1921. Christiansen, Johanne; Douglas, C. G., and Haldane, J. S.: The Absorption and Dissociation of Carbon Dioxide by Human Blood, J. Physiol. **48**: 244-271 (July 14) 1914.

35. Haldane, J. S.; Meakins, J. C., and Priestley, J. G.: The Effects of Shallow Breathing, J. Physiol. **52**: 432-453 (May 20) 1918.

of the vocal cord following operation on the thyroid gland; when the patient is fully awake, conscious efforts at keeping the airway clear of mucus and the tongue and lower jaw forward may temporarily decrease the degree of cyanosis. The actual determination of the oxygen saturation of the arterial blood gives, of course, an exact estimation of the intensity of the arterial desaturation and indirectly of the anoxemia and is therefore an exceedingly valuable procedure in investigative work. Such determinations, however, are impracticable as a routine and fortunately are not necessary for the efficient selection and treatment of patients who really need oxygen, if Stadie's approximate values are kept in mind. However, attention must again be called to the fact that the intensity of the anoxemia is not necessarily indicated by the degree of the cyanosis.

Little practical benefit is obtained from the administration of oxygen if the hemoglobin is already completely, or almost completely, saturated with oxygen from the respiration of normal air (or in those conditions known as histotoxic anoxia, in which the cells themselves are unable to use oxygen, as in poisoning with cyanides). The reason this is true is that hemoglobin [36] cannot take up more than the amount sufficient to saturate it, and in individuals with normal lungs the concentration of oxygen in the lungs from the breathing of air at or near sea level is sufficient to saturate the hemoglobin of the mixed arterial blood to within 3 or 4 per cent of complete saturation. Therefore, the extra amount obtained by breathing a 50 per cent mixture of oxygen cannot cause more than a 6 per cent increase even after allowing for the slightly increased amount that will go into physical solution in the plasma. When, however, the hemoglobin is only 70 or even 80 per cent saturated, as often occurs in pulmonary edema or pneumonia, administration of oxygen can produce great practical benefit by increasing the amount in the blood by as much as 30 or 20 per cent, thereby greatly raising the oxygen pressure in the tissues. Marked benefit, therefore, can result from administration of oxygen to patients whose arterial blood is only partially saturated and can obviously do little good, and sometimes no good, to the patient whose arterial blood is saturated, or almost saturated, as occurs normally.

Douglas and Haldane [37] showed that the irregular type of breathing known as Cheyne-Stokes breathing is brought about by, and is evidence of, oxygen want. Haldane, Meakins and Priestley,[38] not long ago, by an ingenious experiment, demonstrated that shallow breathing in itself might cause and not be merely the result of anoxemia, and without much obvious cyanosis; furthermore, they again emphasized the fact that in many instances it is unsafe to judge the degree of anoxemia by the degree of cyanosis. Haldane [14b] pointed out that "the frequent and shallow breathing in surgical shock, or in various forms of influenza and pneumonia conditions, or as it may occur in many other forms of disease, is a symptom of which the possible deadly import is often not realized." Shallow breathing following major surgical operations, especially in the presence of marked debility, is not an infrequent occurrence; in fact, high and long abdominal incisions with tight abdominal and thoracic swathing often make any other type of breathing well-nigh impossible, as emphasized by Lemon [39] and by Muller, Overholt and Pendergrass.[40] Keith [41] has shown that the lungs do not expand equally but open up like a Japanese fan, the expansion does not take place instantly and equally throughout, and consequently parts of the lung, especially the lower portions, may be in a state of partial or complete disuse when the breathing is shallow. As there will be relatively little decrease in the blood going through this unaerated portion of the lung,[42] this blood will not be oxygenated and therefore will greatly reduce the average saturation of the mixed arterial blood.

Judd [25] has made an extensive study of the value of oxygen therapy following major surgical procedures on patients who present evidence of shock and shallow breathing, in addition to its routine use on patients with postoperative pulmonary edema and pneumonia. No further report of this study has been published since the preliminary paper by Binger, Judd, Moore, and Wilder. Judd [43] has, however, summarized the recent results of the study as follows:

> There can be no question that the use of oxygen is a valuable aid in the immediate postoperative care of patients for whom surgical treatment has been carried out on account of some serious abdominal conditions. Among other beneficial effects, I believe an important one is that it has a tendency to prevent the accumulation of mucus in the respiratory tract and decrease the tendency to pulmonary edema. When breathing oxygen, the patient with shallow breathing is much more comfortable and has a better color than when he is breathing ordinary air. Comfort is often a very important consideration in these cases. From our experience with the use of oxygen postoperatively, and particularly following operations in the upper part of the abdomen, we are convinced that it plays an important part in the convalescence. We frequently use it for forty-eight hours after any serious operation to prevent an anoxemia from developing. After the oxygen tent is removed, the patient often asks to have oxygen again, stating that it adds greatly to his comfort.
>
> We feel that there can be no question that the use of oxygen postoperatively has a definitely favorable effect on the prevention and treatment of pulmonary edema and congestion. In our opinion, we have materially reduced the incidence of postoperative pneumonia since using oxygen therapy freely following major surgical procedures. It is without question an important aid in the treatment of pneumonia.

Lundy [44] has called my attention to a condition in which shallow breathing is likely to occur and in which administration of oxygen often proves of definite advantage. Following the administration of a spinal anesthetic shallow breathing is not an infrequent complication, accompanied by an ashen gray type of cyanosis and nausea, with more or less collapse, and prompt benefit is obtained by the use of oxygen, usually administered in the operating room by means of the anesthesia apparatus, and later continued by the use of the oxygen tent.

In considering oxygen therapy and the factors on which its application is based, one is likely to overlook the observation made by Leonard Hill. He found that an intractable ulcer in the leg, with impaired circulation and cyanosis, following a gun-shot wound during the war, cleared up with surprising rapidity when oxygen was given. In fact, it was for this purpose that he

36. Haldane.[14b] Barcroft.[22b]
37. Douglas, C. G., and Haldane, J. S.: The Causes of Periodic or Cheyne-Stokes Breathing, J. Physiol. **38**: 401-419 (June 15) 1909.
38. Haldane, J. S.; Meakins, J. C., and Priestley, J. G.: The Respiratory Response to Anoxaemia, J. Physiol. **52**: 420-432 (May 20) 1918. (Footnote 35.)
39. Lemon, W. S.: The Effect of Surgical Operations and of Bandaging on Respiration, Minnesota Med. **11**: 725-729 (Nov.) 1928.
40. Muller, G. P.; Overholt, R. H., and Pendergrass, E. P.: Postoperative Pulmonary Hypoventilation, Arch. Surg. **19**: 1322-1345 (Dec.) 1929.
41. Keith, Arthur: The Mechanism of Respiration, in Hill, Leonard: Further Advances in Physiology, London, Edward Arnold, 1909, pp. 182-207.
42. Haldane.[14b] Lundsgaard and Van Slyke.[25]
43. Judd: Personal communication to the author.
44. Lundy: Personal communication to the author.

devised the first oxygen tent. Although he does not mention the fact, it is probable that this patient also had some chronic pulmonary condition, or a shallow type of breathing, which prevented complete oxygenation of the blood; therefore, only a limited number of ulcers or nonhealing wounds would respond favorably to oxygen therapy. It is conceivable, however, that benefit could occur in a considerable variety of intractable wounds if they were carefully selected. Whether benefit could be anticipated as probable or improbable in an individual instance could be easily tested by a trial application; and if the cyanosis disappeared and the color of the part became good, consistent treatment could be instituted. In other instances, beneficial effect could be obtained by increasing the supply of oxygen or, rather, the oxygen pressure to which the tissues are exposed by the proper application of heat. Meakins and Davies [45] have shown that the supply of blood to an extremity can be so much increased by placing the hand and arm in a water bath at 45 C. that the character of the venous blood changed until it became from 90 to 92 per cent saturated with oxygen. They suggested that a probable explanation of the therapeutic value of heat is due, at least in part, to the greatly increased pressure of oxygen resulting from the increase in flow of blood thereby produced. This effect of heat is emphasized here because it is actually a method of oxygen therapy.

Another highly important factor that is usually overlooked is the "time" factor in relation to anoxemia. In the operating room, during the course of anesthesia, physicians have become more or less accustomed to considerable degrees of cyanosis and have felt that for short periods even marked cyanosis causes little demonstrable harm, but fortunately surgeons and anesthetists are beginning to recognize the importance of some of the less obvious harmful effects of even mild degrees of cyanosis. In the operating room, however, one is dealing with short periods, minutes, or occasionally an hour, during which time relatively little cumulative effect is produced. The contrary is true for anoxemia of even mild or, for the operating room, insignificant degree, if it is continued for a considerable time and the patient is so sick that the various compensating mechanisms cannot come into play. Possibly the most striking and convincing experience I have seen in that line is the great reduction in the mortality caused by foreign bodies inhaled into the trachea and bronchi of children by the institution of oxygen therapy before and after bronchoscopy, a preliminary report of which has been given by Moersch and Boothby.[46] Careful observers have long recognized the ill effects of anoxemia on children, and they appreciate the dangers of a prolongation of that condition even by a few minutes either on the operating table or in such a condition as croupous pneumonia of children. The danger was particularly recognized in the hospitals of large cities which receive children with diphtheria, especially before the days of antitoxin; the rapidity of intubation was stressed as a life-saving and emergency procedure. Well do the residents of those institutions remember the necessity of almost instantaneous intubation as the clanging bell of the ambulance room rang through the hospital to notify the staff of the arrival of another child with laryngeal diphtheria and obstructed respiration.

45. Meakins, Jonathan, and Davies, H. W.: Observations on the Gases in Human Arterial and Venous Blood, J. Path. & Bact. **23**: 451-461 (Dec.) 1920.

46. Moersch, H. J., and Boothby, W. M.: The Value of Oxygen Following Bronchoscopy in Children, Arch. Otolaryng. **6**: 542-545 (Dec.) 1927.

For the purpose of providing oxygen therapy for conditions of anoxemia in the new-born, I have modified, in conjunction with Amberg, a Hess incubator as described later, so that it is a miniature oxygen chamber.

Boothby and Haines were the first to call attention to a striking and characteristic crisis-like drop of from 2 to 5 degrees F. in the temperature which often occurs among patients with anoxemia following admission to the oxygen chamber. This decrease in temperature occurs less frequently and to a less marked degree from the use of oxygen tents, especially the older types, because of the difficulty in always maintaining a sufficient and constant oxygen percentage. The most marked decrease in temperature usually occurs in cases of postoperative pulmonary edema before the physical signs of bronchopneumonia develop. Accompanying the drop in temperature there is usually a corresponding decrease in the pulse and respiratory rates. The immediate signs of clinical improvement, as evidenced by decrease in temperature, are more marked in postoperative bronchopneumonia than in severe lobar pneumonia; in the latter case the virulence and type of infecting organism are more often the dominant factors. Sometimes, following removal from the oxygen chamber, there is a slight rise in the temperature. If this increase in temperature amounts to much more than a degree, it usually indicates that oxygen therapy should be continued for another day or two. Oxygen therapy, to be of benefit, must be continued as long as it is needed. The body contains no storehouse or reserve of oxygen, and the moment administration of oxygen is discontinued the ill effects of oxygen insufficiency recur. The custom of giving oxygen therapy intermittently for a few hours each day is not only valueless but, with rare exceptions, is a waste of money, because the patient needs oxygen therapy either all the time or not at all. The custom in a hospital of giving oxygen intermittently usually originates in an insufficient supply of equipment for oxygen therapy.

Administration of oxygen is the principal measure for relief of anoxemia of any type. However, as emphasized by Henderson and his associates,[47] the use of carbon dioxide is also a valuable adjunct to oxygen in the treatment of anoxemia arising from certain causes specifically associated with acapnia. The inhalation of carbon dioxide in concentrations above 1 per cent causes stimulation of the respiratory center and deeper breathing.[14b] With concentrations around 4 per cent the breathing is increased greatly in depth and also slightly in frequency; with concentrations around 4.5 to 5 per cent the breathing is extremely labored and almost unbearable for many individuals and may cause nausea and incoordination even among healthy normal persons. As pointed out by Henderson,[47e] deep breathing is often beneficial in atelectasis; [48] administration of a high (5 per cent) concentration of carbon dioxide for short periods to initiate breathing may often be a life-saving

47. (*a*) Henderson, Yandell: The Prevention and Treatment of Asphyxia in the New-Born, J. A. M. A. **90**: 583-586 (Feb. 25) 1928; (*b*) The Dangers of Carbon Monoxide Poisoning and Measures to Lessen These Dangers, ibid. **94**: 179-185 (Jan. 18) 1930; (*c*) Acapnia as a Factor in Postoperative Shock, Atelectasis and Pneumonia, ibid. **95**: 572-575 (Aug. 23) 1930; (*d*) Inhalational Treatment of Angina Pectoris and Intermittent Claudication, Am. Heart J. **6**: 548-555 (April) 1931; (*e*) Reasons for the Use of Carbon Dioxide with Oxygen in the Treatment of Pneumonia, New England J. Med. **206**: 151-155 (Jan. 28) 1932. (*f*) Henderson, Yandell; Haggard, H. W.; Coryllos, P. N., and Birnbaum, G. L.: The Treatment of Pneumonia by Inhalation of Carbon Dioxide: I. The Relief of Atelectasis, Arch. Int. Med. **45**: 72-91 (Jan.) 1930.

48. Coryllos, P. N., and Birnbaum, G. L.: Obstructive Massive Atelectasis of the Lung, Arch. Surg. **16**: 501-559 (Feb.) 1928; Bronchial Obstruction: Its Relation to Atelectasis; Bronchopneumonia and Lobar Pneumonia, Am. J. Roentgenol. **22**: 401-430 (Nov.) 1929; The Circulation in the Compressed, Atelectatic Lung, Arch. Surg. **19**: 1346-1424 (Dec.) 1929.

measure in the new-born.[47a] The belief that the value of oxygen therapy can be materially increased in more than a few instances by addition of more than a 2 per cent concentration of carbon dioxide to 50 per cent oxygen needs further investigation. Such an investigation can be readily carried out with the newer models of oxygen tents, with the tent cloth tightly tucked in, and the by-pass valve turned so that either none or only part of the circulating air passes over the soda lime. With the flow of oxygen around 4 liters per minute, and the tent tightly tucked in, and with a cooperative patient, both the carbon dioxide will rise and the desired concentration of oxygen will be maintained. When an increased content of carbon dioxide, as well as of oxygen, is desired, frequent analyses of the atmosphere of the tent must be made to determine the concentration of both gases; the flow of oxygen should be maintained as low as possible, so as not to wash out carbon dioxide and waste oxygen and yet maintain the desired oxygen concentration; the concentration of carbon dioxide can be prevented from going too high by proper adjustment of the by-pass valve which controls the amount of the circulating air which passes through the soda lime container. The concentration of carbon dioxide should never be allowed to rise sufficiently to cause labored respiration or discomfort.

For the older types of tents in which a flow of oxygen of 8 or 10 liters per minute is needed to maintain a concentration of 50 per cent oxygen, Henderson [47e] has suggested the use of a mixture of oxygen containing 5 per cent carbon dioxide, known commercially as carbonogen, in order to obtain a sufficiently high concentration of carbon dioxide in the tent. (The use of "carbonogen" at the rate of 10 liters per minute would be so expensive that the cost would be almost prohibitive except in a few special instances.)

Henderson and his associates [49] are enthusiastic about the increase in value of oxygen therapy produced by the addition of carbon dioxide and they strongly recommend the combination. The results they report in pneumonia are similar to those generally reported for standard oxygen therapy; there is, of course, no reason why the addition of carbon dioxide up to 3.5 or 4 per cent would decrease the value of oxygen therapy, although at the high concentration the labored respiration might be the cause of considerable discomfort to some, and in a few cases there might be nausea and even vomiting, especially if the concentration of carbon dioxide went above 4.5 per cent. The evidence of Henderson and his associates [50] is still insufficient to demonstrate an advantage, for the majority of cases, of a concentration in excess of 1 or 1.5 per cent carbon dioxide with the utilization of 50 per cent oxygen. However, for patients with acapnia,[47c] such as the one whose case was reported by Harrington, Lundy and Frederickson,[51] the addition of carbon dioxide to the oxygen is of distinct benefit. The case cited was an excellent example of the peculiar and rather rare condition of primary acapnia in which carbon dioxide is specifically indicated and may even be of more value than oxygen itself.

The emergency treatment of carbon monoxide poisoning with oxygen and carbon dioxide [52] presents problems on the whole very different from those involved in oxygen therapy. Henderson,[47b] by continuing in this country the work of Haldane in England, deserves credit for the saving of many lives from carbon monoxide poisoning by advocating the prompt use of oxygen combined with 5 per cent carbon dioxide and persuading the emergency services to install proper equipment. Full details of the emergency method of treating carbon monoxide poisoning are given by Henderson [47b] in his report for the Committee on Poisonous Gases of the American Medical Association and need not be repeated here except to say that these patients should be placed in an oxygen tent as soon as possible on arrival at the hospital. For a few hours a rather wasteful flow of oxygen should be used, somewhere around 10 liters per minute, in order that the carbon monoxide which is eliminated in the respiration will be washed out of the tent. Soda lime does not absorb carbon monoxide; and as an increase in carbon dioxide in this condition is desirable, the soda lime container can be entirely eliminated, at least during the earlier stages of treatment with a rapid flow of oxygen.

The anoxemia associated with cardiac disease is a condition in which oxygen therapy will be a therapeutic measure of considerable value in only a few instances. As pointed out by Haldane,[14b] cyanosis due primarily to slowing of the circulation is not in itself such a serious condition as the cyanosis due to incomplete saturation of the arterial blood with oxygen, which occurs in pulmonary edema and pneumonia. One of several reasons why a circulatory cyanosis is less harmful is that the slowed circulation will also cause an abnormal increase in the carbon dioxide tension, which, on account of the peculiar effect of carbon dioxide on the dissociation curve of hemoglobin, known as the Bohr effect, will drive off a larger quantity of oxygen with only a comparatively small fall in oxygen pressure, although producing very considerable cyanosis. The most striking example of the comparative lack of ill effects of high grade chronic cyanosis is in the case of congenital cardiac defect. In fact, in any form of chronic cyanosis, whether cardiac or pulmonary, the organism will build up a compensatory mechanism which decreases the harmful effect of the cyanosis in a manner not dissimilar to the acclimatization to low oxygen pressure acquired by people living in high altitudes. The danger of destroying this compensation must be borne in mind before instituting oxygen therapy for any patient with chronic cyanosis, whether of cardiac or of pulmonary origin. For example, Barach reported a case of pulmonary fibrosis in which, after oxygen therapy was started, the patient appeared unable to live without oxygen treatment; finally, however, after five months, it was possible for the patient to carry on a restricted activity without oxygen treatment. Therefore, in any condition of chronic cyanosis serious consideration must be given to the possibility of having to supply the ways and means of oxygen therapy for an indefinite period after it is once instituted and all this without the prospect of much real benefit. Again, as Haldane pointed out, the very fact that cyanosis may exist without much harm in chronic or congenital cardiac disease has greatly contributed to the general failure to recognize the gravity of prolonged anoxemia suddenly imposed on persons who are not acclimatized to low oxygen concentration.

Acclimatization is a process that always requires time. Furthermore, the inherent ability of the body to make this adaptation if in good health is probably often

49. Henderson.[47e] Henderson.[47e] Henderson, Haggard, Coryllos and Birnbaum.[47f]

50. Henderson.[47e] Henderson, Haggard, Coryllos and Birnbaum.[47f]

51. Harrington, S. W.; Lundy, J. S., and Frederickson, C. H.: Delayed Acapnia and Shock Following Resection of a Rib: Report of a Case in Which Relief was Obtained by Administration of Dilute Carbon Dioxide, Minnesota Med. **12**: 550-551 (Sept.) 1929.

52. Drinker, C. K.: The Efficiency of the Oxygen-Carbon Dioxide Treatment of Carbon Monoxide Poisoning, J. Indust. Hyg. **7**: 539-558 (Dec.) 1925. Henderson.[47b]

seriously impaired or entirely absent if patients are critically ill.

On the other hand, in any condition of acute anoxemia, whether cardiac or pulmonary, superimposed on a sick person, death may result therefrom unless the anoxemia is relieved by oxygen therapy, for sick patients do not seem able to develop even a slight degree of adaptation to low oxygen pressure. Therefore in certain types of cardiac disease associated with acute anoxemia some patients may be greatly helped; a few may even be tided over the critical period. As suggested by Levy and Barach,[53] treatment should be started immediately in cases of acute coronary occlusion or in cases of acute heart failure from any cause attended with cyanosis and marked dyspnea.

(To be continued)

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

LARABEE'S DIXIE DREAM CRACKER FLOUR (BLEACHED)

Manufacturer.—Larabee Flour Mills Company, Minneapolis.

Description.—A soft winter wheat "straight" flour; bleached.

Manufacture.—Selected soft winter wheat is cleaned, tempered, scoured and milled by essentially the same procedure as described in THE JOURNAL, June 28, 1932, page 2210. The flour streams are blended, and bleached with a mixture of benzoyl peroxide and calcium phosphate (one-half ounce per 196 pounds), with nitrogen trichloride (from 1/20 to 1/5 ounce per 196 pounds) and chlorine (three-fourths ounce per 196 pounds).

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.0 –14.5
Ash	0.34– 0.41
Fat (ether extraction method)	0.9 – 1.5
Protein (N × 5.7)	9.2 – 9.8
Crude fiber	0.2 – 0.4
Carbohydrates other than crude fiber (by difference)	76.6 –73.4

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—The flour is especially designed for cracker baking.

GOLDEN GRAIN 100 PER CENT WHOLE WHEAT BREAD

Manufacturer.—Helms Bakeries, Ltd., Los Angeles.

Description.—A whole wheat bread made by the straight dough method (method described in THE JOURNAL, March 18, 1932, p. 889) prepared from whole wheat flour, water, sweetened condensed skim milk, yeast, salt, lard, honey, light molasses syrup and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	36.8
Ash	2.5
Fat	2.7
Protein (N × 6.25)	13.0
Crude fiber	1.6
Carbohydrates other than crude fiber (by difference)	43.4

Calories.—2.5 per gram; 71 per ounce.

Claims of Manufacturer.—The bread conforms to U. S. Department of Agriculture definition and standard for whole wheat bread.

53. Levy, R. L., and Barach, A. L.: The Therapeutic Use of Oxygen in Coronary Thrombosis, J. A. M. A. 94: 1363-1365 (May 3) 1930.

MELLIN'S FOOD BISCUITS

Manufacturer.—Mellin's Food Company of North America, Boston.

Description.—Baked biscuits prepared from wheat flour, Mellin's Food (essentially maltose, dextrins, cereal protein and minerals and potassium bicarbonate), cane sugar, oleomargarine and sodium bicarbonate.

Manufacture.—The dough prepared from water, wheat flour, Mellin's Food, sucrose, oleomargarine and sodium bicarbonate is aged for several hours, rolled into thin sheets, cut into biscuit form and baked. The baked biscuits are packed in tins lined with parafin paper.

Analysis (submitted by manufacturer).—

	per cent
Moisture	4.0
Ash	1.8
Fat (Roese-Gottlieb method)	9.4
Protein (N × 6.25)	8.6
Reducing sugars as maltose	15.0
Sucrose (diastase method)	13.3
Crude fiber	0.2
Total carbohydrates other than crude fiber (by difference)	76.0

Calories.—4.2 per gram; 119 per ounce; 1 biscuit = 17 calories.

Claims of Manufacturer.—These easily digested biscuits are intended for children passing from a purely infant's diet to more substantial nutriment and for invalids.

EMPRESS FLOUR (BLEACHED)

Manufacturer.—Larabee Flour Mills Company, of the Commander-Larabee Corporation, Minneapolis.

Description.—A hard winter wheat "strong" patent flour; bleached.

Manufacture.—Selected hard winter wheat is cleaned, washed, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended, and bleached with a mixture of benzoyl peroxide and calcium phosphate (three-fourths ounce per 196 pounds) and with nitrogen trichloride (1/5 ounce per 196 pounds).

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.0 –14.5
Ash	0.38– 0.43
Fat (ether extraction method)	0.9 – 1.6
Protein (N × 5.7)	10.8 –11.3
Crude fiber	0.2 – 0.4
Carbohydrates other than crude fiber (by difference)	74.7 –71.8

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—The flour is designed for commercial bread baking.

BM MCo CREAM CORN MEAL (Bolted and Degerminated)

Manufacturer.—The Scott County Milling Company, Sikeston, Mo.

Description.—Fine granular corn meal practically free of corn germ and bran.

Manufacture.—Foreign material is removed from white corn by sifting and aspiration. The cleaned corn is scoured or polished by friction in a special machine and is aspirated, steamed and passed through "break rolls." The steaming softens and toughens the hull or bran to permit its ready separation from other portions of the grain. The broken stock passes through a drier and then a sifter, which separates the material into "grits," bran and germ streams. The "grits" are aspirated, ground to a meal between rolls, and passed over a 24 mesh wire cloth; that which passes through is used for BM MCo Cream Corn Meal.

Analysis (submitted by manufacturer).—

	per cent
Moisture	14.1
Ash	0.8
Fat (ether extraction method)	2.8
Protein (N × 6.25)	9.0
Reducing sugars as dextrose	0.0
Sucrose (copper reduction method)	0.5
Crude fiber	1.6
Total carbohydrates other than crude fiber (by difference)	71.7

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—A fine granular corn meal for table use.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 10, 1932

THE REPORT OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE

Last week, as announced in THE JOURNAL, the Committee on the Costs of Medical Care, having labored for five years and brought forth principally the peculiar document known as the Majority Report, celebrated the termination of its efforts by a gala day at the New York Academy of Medicine. There the chairman of the committee, Dr. Ray Lyman Wilbur, expressed the hope that "a continuing organization may immediately be formed to promote experimentation and demonstrations in local communities." As might be expected, the economists, particularly those with socialistic leanings, who have found in the Committee on the Costs of Medical Care an outlet for views which they could not express in business, as well as employment for many statisticians and economists, are already active in developing a new group. Morris Llewellyn Cooke, an engineer devoted to the great god "organization," Evans Clark, an economist, director of the Twentieth Century Fund, pet philanthropy of E. A. Filene, and William J. Schieffelin, maker of pharmaceuticals and proprietary medicines, began to assemble a new "American Committee on Medical Costs." In an interview, Mr. Cooke announces that "all the technique of modern adult education will be utilized to offset the possible pressure of an organized medical bureaucracy to impose its self-interested will and desire upon the people." "We have come to a point where, if we are to survive," says Mr. Cooke, "we must accept the contributions of science and engineering." And engineering is Mr. Cooke's business! In 1910 he made a study of eight universities and assailed them for their lack of standardization in curriculums and teaching methods. Is there still any leading educator ready to follow the apostles of standardization? Again Mr. Cooke says, "group payment and group practice are essential for the development of medicine in the United States." Moreover, in support of Mr. Cooke and the majority report comes none other than Edwin R. Embree, president of the Julius Rosenwald Fund, whose views have previously been mentioned in these columns. Mr. Embree is particularly gratified because Drs. Barker, Horsley, Steiner, Roberts, Woodyatt, Bowers, et al. signed with the majority. Finally, the new committee, according to the New York *Times*, has engaged that eminent publicity expert Edward L. Bernays to promote its views.

Now, the medical profession need not be greatly annoyed, shocked, disturbed, excited or angered by this pronouncement, nor need the physicians of our land be affrighted by Cooke's threats relative to what he is going to do to the medical profession. As THE JOURNAL suggested last week, the reactions of the press of this country to the reports of the committee seem to include mingled amazement and amusement. The Washington *Star* says of the recommendation for socialization of medical service: "To say that the suggestion is revolutionary is to make but a mild statement of the fact. But it does not imply the absolute socialization of medicine. That obviously is impossible to contemplate." As will be seen in the complete quotation, which appears under Medical Economics in this issue, the *Star* feels that "socialization of medicine can only be a part of complete socialization of all life." The Boston *Transcript* says: "As a flight of fancy, the majority report of the Committee on the Costs of Medical Care may prove entertaining." And it too sees this recommendation merely as a wedge to complete socialization of our government. But the *Transcript* is not worried. It says the report will soon be nicely pigeonholed and forgotten. Bruce Catton, in a syndicated editorial for NEA Service, remarks that the real cure for the problem lies deeper than a mere reorganization of the medical profession. "The wage-earner's inability to pay for the care he needs, and the doctor's inability to get the income he deserves—aren't these a part of a larger problem whose solution depends on a restoration of economic health to the whole community?" The New York *Herald Tribune* says the report will create more confusion than confidence and it expresses the hope that medical organization will stand firmly against it.

As might also have been anticipated, physicians throughout the country are reacting vigorously and well-nigh unanimously against the recommendation of the majority report. A few county societies are ready to try schemes for group practice. In Philadelphia, official action has been taken calling on the profession to support the views of the minority report. Similar action is in process elsewhere. In New Haven the *Register* interviewed numerous members of the profession, who, with the exception of Dean Winternitz, voiced opposition, one physician suggesting that the report would go the way of the miniature golf courses. Moreover, the Commission on Medical Education, which has just rendered its final report, also discussed editorially in this issue, recognizes the need for medical

leadership, individual responsibility, and emphasis on the quality of medical care rather than on its cost.

Especially significant, at this time, when a serious attempt is made to socialize medical practice in this country, is an editorial just published in the London *Lancet*[1] on "Medicine and the State." After tracing the development of the English system to 1926, when "a large measure of socialization of medicine" seemed imminent, the *Lancet* points out that the British Medical Association in 1930 was ready to adopt a "widely extended system of medical insurance." But, it says, "the situation is now very different from what it was two years ago. Excessive claims on sickness benefits and the abnormal burdens falling on the unemployment insurance funds have cast doubt upon the soundness of the whole idea of social insurance, both from the economic and the moral standpoint."

The physicians of this country are the only group with the knowledge, training and experience necessary to practice medicine. Intent on their daily and nightly task of preventing disease, healing the sick and ministering to the afflicted, they have given scant attention and but little of their time to a consideration of the way in which their work was being invaded by the octopus of big business. They have been little disturbed by the extraordinary schemes for reorganizing their methods of practice proposed by philanthropists, economists, sociologists, socialists and overambitious public health officials. Now the time has come when they can no longer overlook the problems created by this invasion. Public health officials are beginning to see the necessity of giving medicine back to the doctors.

Let those who would, without medical training, change the nature of medical practice realize that medicine is peculiarly the doctor's problem. There can be no practice of medicine without doctors. These invaders will find that there are few physicians indeed so unaware of their obligation to medicine as a profession that they are ready, even in such times as these, to sell their medical birthrights for the promoters' mess of pottage.

There is, moreover, a far greater concern than the rights of the physician to practice as his knowledge and training indicate is desirable. There is the question of Americanism versus sovietism for the American people. There is the question of the right of the American citizen to pick his own doctor and his own hospital, to pay his own bills with his own money, to be responsible to a doctor who is responsible to him. Let the big business men who would reorganize medical practice, the efficiency engineers who would make doctors the cogs of their governmental machines, give a little of their sixty horse power brains to a realization of the fact that Americans prefer to be human beings. The commissions, the committees, the five year studies and the special reports seem to be a product of the period of inflation when the world went mad over efficiency systems, organization and standardization. Perhaps the return of rationality associated with the period of deflation will cause this report on the care of sickness to be viewed in proper perspective.

1. Medicine and the State, editorial, Lancet 2: 1116 (Nov. 19) 1932.

THE COMMISSION ON MEDICAL EDUCATION

In 1925 the Association of American Medical Colleges organized a commission to make a study of the educational principles involved in medical education and licensure. It was desired to correlate medical education with advances in university education and with the needs of present-day society. The work of the commission was financed largely with contributions from medical schools, the American Medical Association, the Rockefeller Foundation, the Carnegie Corporation and the Josiah Macy, Jr., Foundation. A considerable amount of data was collected during the course of the work which has been published from time to time. The final report[1] is just available.

The commission included for the most part distinguished medical and other educators and also representatives of the Association of American Medical Colleges and of the American Medical Association. Obviously it had to be concerned not only with a review of the medical curriculum but also with the supply and distribution of physicians, graduate education, licensure, premedical education, medical education abroad and the nature of medical practice. From its survey of the situation it has developed a report which is especially significant at a time when the Committee on the Costs of Medical Care has offered to the American people a series of conclusions leading toward the socialization of medical practice.

The Commission on Medical Education recognizes the social changes that have occurred and the new demands that are being made on the medical profession. It therefore urges increased training of physicians in sociology and economics. The commission recognizes that physicians must bear the responsibility for medical care. There is a definite lag between the knowledge of medicine that is available and the delivery of that knowledge to the public. Hundreds of experiments are now in process in this country in attempts to change the nature of medical practice. However, the commission feels that the question of securing a more effective and wider application of sound medical services through a better distribution of the economic burden of illness should not conceal the more important question of the quality of medical care. The quality of medical care is the most important factor, not the plan of organization nor the method of financing. Probably the next most important observation made by the commission is its emphasis on the fact that there has been an overproduction of physicians. "There is an oversupply of physicians in this country," says the commission, "and

1. Final Report of the Commission on Medical Education, New York, Office of the Director of Study, 1932.

there are indications that it will increase." Moreover, the distribution of doctors is faulty. These are facts which have been emphasized repeatedly in the columns of THE JOURNAL, and means must be developed for correcting this situation.

Especially significant also in this report is the discussion of standardized medical service and mass treatment. The commission says: "Some maintain that standardized medical service should be made available on a mass-production basis. The unit of practice, however, whatever the type or degree of organization, is the individual patient. It is a fundamental fallacy to base any program upon an assumption that the human being can be, or is likely in the future to be, a uniform standardized organism." This statement, coming from a group of men who have passed in their careers through many different phases of medical interests, should be given far more weight than any attempt to change the nature of medical practice coming from a group representing largely men who have devoted their lives to other interests than the care of the sick.

In the scope of an editorial it is not possible to give an extended review of all the points covered even in the summary of the report of this commission. The report ends with a challenge to the medical profession, the universities and the medical schools to develop proper leadership in securing a medical profession of the proper quality for the needs of today and of the future. "There is an urgent need," says the report, "for the coordination of the efforts of the various groups and individuals in the field to obviate the inadequacies of isolated and duplicating activities, to secure collective expressions of policy, and an active participation of all in the common undertaking." And the report ends by urging that "Emphasis must be kept constantly upon the fact that only through a sufficient number of properly trained physicians can a community expect to meet its responsibility for the care and prevention of illness and the protection of health. There is no substitute for this essential feature."

DEATH FROM ACUTE PORTAL OBSTRUCTION

The nature of the sudden death following acute complete closure of the main portal vein was long a mystery. This accident occurs at times, after operations on the gallbladder, from a massive thrombosis of the vessel. The condition can easily be reproduced in experimental animals by tying a ligature round the vein, whereupon symptoms of prostration and shock invariably develop and death supervenes, usually within an hour.

Claude Bernard,[1] in his lectures of 1858, first recorded the fact that ligation of the portal vein is rapidly fatal within an hour or two. Thus, he said: "It is peculiar that this animal succumbed so rapidly and with these bizarre symptoms. It must be admitted as due to a cause other than hemorrhagic congestion of the intestine." In lectures published nearly twenty years later, he [2] mentioned the same experiment but now stated: "The mechanism of death is easy to understand. All the blood accumulates in the intestinal vessels—the brain and other organs become exsanguinated and the animal dies of an actual anemia." While this idea is plausible enough, he did not present data in its support nor was he apparently aware that Tappenheimer,[3] a few years before, had investigated this hypothesis and from his data concluded that not enough blood was lost into the obstructed portal system to account for the fall of arterial pressure and death.

For the next sixty years, few further investigations were made. Explanations were offered as to the cause of death, usually that some toxemia was present, perhaps akin to that in intestinal obstruction, although a specific substance was not mentioned and evidence of the existence of a poison was not made available. The inevitable fall of blood pressure immediately following portal ligation was confirmed by several observers. Not long ago several Russian workers [4] demonstrated a remarkable and progressive increase in the speed of coagulation of carotid blood, while behind the ligature the entrapped portal blood suffered the opposite effect; that is, a decrease in its clotting time. Other changes also were observed, but inferences could not be drawn.

The problem has been investigated recently by Elman and Cole [5] of the Washington University School of Medicine, who found, first of all, no evidence that a toxin was present following portal occlusion. At least they found no difference in the toxicity of portal and systemic blood and thoracic duct lymph obtained before and after ligation of the portal vein, when injected into guinea-pigs. They did find from their experiments, however, that sufficient blood was lost into the splanchnic area to account for death from circulatory failure due to loss of blood alone. Thus the increase in weight of the gastro-intestinal tract following portal ligation over the controls accounted for more than 5 per cent of the body weight in a series of dogs and 3.4 per cent in cats—amounts quite sufficient in terms of circulating blood to lower the blood pressure below that compatible with life. Since, during the short period intervening between ligation and death, there was practically no transudation of fluid into the intestinal lumen or into the peritoneal cavity, this increase was due entirely to the blood present in the engorged intestinal capillaries. The idea of Claude Bernard was thus substantiated to some extent, though the problem really is not one of anemia in the ordinary sense of the word. There are

1. Bernard, Claude: Leçons sur les propriétés physiologiques et les altérations pathologiques des liquides de l'organisme, Paris, J.-B. Baillière et fils **2**: 196, 1858.

2. Bernard, Claude: Leçons sur le diabète et la glycogenèse animale, Paris, J.-B. Baillière et fils, 1877, p. 316.

3. Tappenheimer, H.: Ueber den Zustand des Blutstroms nach Unterbindung der Pfortader, Arb. a. d. Physiolog. Anstalt Leipzig **7**: 11, 1873.

4. Tschernikoff, A. M.; Malenjuk, W. W.; Jakubovitsch, M. I., and Klantaroff, M. C.: Zur Unterbindung der V. portae, Arch. f. d. ges. Physiol. **227**: 85, 1931.

5. Elman, Robert, and Cole, W. H.: Loss of Blood as a Factor in Death from Acute Portal Obstruction, Proc. Soc. Exper. Biol. & Med. **29**: 1122 (June) 1932.

quite enough red blood cells to maintain the blood function. The defect is that the amount of fluid is less than that mechanically necessary to maintain blood pressure at a vital level.

Such a purely physical mechanism may play an important part in other more common problems of intestinal pathologic conditions, particularly acute intestinal obstruction and strangulation. Scott and Wangensteen [6] of Minneapolis have recently demonstrated great losses of fluid into loops of strangulated bowel, less extensive than those found by the St. Louis investigators in the case of portal occlusion, but losses that seemed to be sufficient to cause the fatal outcome. Blalock [7] of Vanderbilt University School of Medicine showed that the fall in blood pressure during prolonged handling of the intestine could be accounted for entirely by the loss of transudated plasma incident to the trauma.

These investigations all lead away from the rather fruitless and vague, though long in vogue, theories of "toxemia" and point the way to physical factors. Eventually these studies may do much to explain the baffling problem of death in low intestinal obstruction and thus help in the reduction of its appalling mortality.

Current Comment

THE NATURE OF IMMUNITY TO POLIOMYELITIS

The demonstration by Shaughnessy, Aycock and others that normal adult human serum usually neutralizes virus of poliomyelitis in vitro has stimulated speculative interest as to the origin and nature of this special property of the serum. Classically it would be assumed that this power to neutralize is due to a specific antibody resulting from previous personal contact with the virus. An alternative theory pictures the property as nonspecific, and as the result of a normal "physiologic maturation." Jungeblut and Engle [1] of Columbia University have tested this theory and have recently published evidence in its support. They compared the powers of immature and fully mature rhesus monkey serums against virus of poliomyelitis. The monkey was kept under the strictest quarantine conditions, which they believe effectively ruled out all contact with the virus. No immature rhesus serum thus far tested by them has neutralized virus of poliomyelitis in vitro. In contrast, two thirds of the mature rhesus serums, withdrawn within ten days after the onset of menstrual bleeding, were markedly virucidal. Their tentative conclusion is that "the fall of [poliomyelitis] morbidity and the rising level of serological activity with increasing age is predominantly a function of normal physiological maturation and to a large extent seems to develop independently of previous contact with the specific antigen."

6. Scott, H. G., and Wangensteen, O. H.: Blood Losses in Experimental Intestinal Strangulations and Their Relationship to Degree of Shock and Death, Proc. Soc. Exper. Biol. & Med. **29**: 748 (March) 1932.
7. Blalock, Alfred: Trauma to the Intestines: The Importance of the Local Loss of Fluid in the Production of Low Blood Pressure, Arch. Surg. **22**: 314 (Feb.) 1931.
1. Jungeblut, C. W., and Engle, E. T.: Proc. Soc. Exper. Biol. & Med. **29**: 879 (April) 1932.

Medical Economics

NEWSPAPER COMMENT ON THE REPORT OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE

The Washington Star

SOCIALIZING MEDICAL CARE

A majority of the Committee on the Costs of Medical Care, according to a final report filed yesterday, recommends the socialization of medical service. To say that the suggestion is revolutionary is to make but a mild statement of the fact. But it does not imply the absolute socialization of medicine. That, obviously, is impossible to contemplate.

Clear understanding of exactly what the majority of the committee desires is imperative. In summary it amounts to this: A group practice and a system of group payment would be established, with community medical centers to provide complete medical service, both preventive and therapeutic. The work would be financed by weekly or monthly fees, in the form of insurance, taxation, or both. The poor and needy would be assured medical attention at cost. The scheme, its friends declare, would "provide for the first time a scientific basis on which communities throughout the country (could) attack the perplexing problem of providing adequate medical care for all persons, at costs within their means."

Granted that conditions as they are at present do not merit the unqualified approval of the public, and granted that there is room for vast improvement, the natural question is whether or not this one problem should be separated from all others and organized and protected under State or Federal supervision. The plan suggested by the majority of the committee could not be placed in effect without Government aid. That fact cannot be evaded. It signifies a kind of "public ownership" of medical service. It is in agreement with a tenet of the philosophy of socialism. That means that there would be a danger of political interference. If it succeeded, it would do so in spite of its political connotation. The notion that Government control would end all difficulties is unscientific.

Medical care is but one of the many problems of the people. Food, rent, clothing, fuel, in the order mentioned, also concern them. If it be proper to socialize the one, it follows that it must be proper to socialize the others. The American people in 1929 spent 3,647 millions of dollars to employ physicians, nurses and dentists, to pay hospital bills and to buy drugs and medicines of various kinds. That is a prodigious sum of money, but it is only a fourth of the total spent for food. The majority of the committee does not suppose that the people would spend less for health under their scheme than they now are spending. To do so would be illogical. Actually, an increase could be expected. Under the new plan the number of patients would be larger. Hence the cost would be greater. True, the expense would be assumed by the whole people and the direct beneficiaries of the scheme would pay only if, as and when they could. Of course, the plan is beautifully idealistic, but why not expand it to include all the other things about which the poor are worried? Why not socialize food and clothing, rent and fuel? Why not socialize education? Why not socialize the lawyers? Why not socialize the clergy? Let there be no mistake about it: If socialization of medical care is right and just, wise and useful, then, by the same logic, a general socialization of life likewise is defensible.

The report is published at a moment when the people are discouraged. It comes as a fruit of the depression. It may be right and it may be wrong. In either case, it is entitled to study. But such examination ought to be unprejudiced. There are two sides to the whole subject, and both should be considered. It should not be forgotten that the American people are the healthiest people in the world and that their ordinary state of wellbeing, culture and prosperity was achieved under what is traditionally known as the American system of civilization, not the Marxian system.

The Boston Evening Transcript

STATE DOCTORS

As a flight of fancy, the majority report of the Committee on the Costs of Medical Care may prove entertaining. It reads like a chapter in a book descriptive of the world conducted on a near-socialistic basis. Thus "the committee recommends that the costs of medical care be placed on a group payment basis, through the use of insurance, through the use of taxation, or through the use of both these methods." Further, there is

recommendation that "the study, evaluation and coordination of medical service be considered important functions for every State and local community, that agencies be formed to exercise these functions, and that the coordination of urban with rural services receive special attention." Such recommendations sound very much like an attempt to put the Government into medicine and surgery.

There is the accompanying statement that all this "is not meant to preclude the continuance of medical service provided on an individual fee basis for those who prefer the present method." In other words, the man who is taxed for the support of governmental practice may, if he chooses, refuse to share in the services which his taxes help support, and pay for his medical care from his own pocket. But, in that order of society pictured by the majority report, it may be doubted that the number of those who desired to pay fees on top of taxes would be sufficient to support many physicians in private practice. There is good reason to believe that, were the plan proposed put into operation, the nation would start along the road which in the end would mean the assumption of practically all medical care by governments, national, state and local. That may not be an objection to the program in the eyes of some of its enthusiastic proponents. It is not likely to commend itself to the common sense of the great body of the people.

As far as group medical service is concerned, there is nothing to prevent provision for it under the present system of medical care. There are clinics for those who like them. The patient who would go from specialist to specialist under the same roof has the opportunity. Doctors may differ as to the value of group practice, but it may be and is provided for those who want it, and it is done without transforming such methods into an activity of Government.

The majority and minority reports of the committee, the opposing attitude of the American Medical Association as voiced in its journal, and the comments of doctors and others in their individual capacities, will add for the moment to interest in life. Thereafter, it is reasonably safe to predict this report, like so many others that created excitement upon their appearance, will find place in a pigeon hole, for the time is not yet, if it is ever to arrive, when more than passing notice will be given to proposals to put the Government into medicine on a scale that would tend to make medicine a Government monopoly.

The New York Herald Tribune

MEDICAL MASS PRODUCTION

The recommendations of Dr. Ray Lyman Wilbur's committee for the partial socialization of medicine are certain to inspire more confusion and doubt than confidence. The promise that is extended of the elimination of incompetents, exorbitant charges by specialists, "fee splitting" and the further promise of making medical attention available to others than the very rich and the very poor in return for reasonable insurance charges will not dispel the layman's natural repugnance to the idea of making something like a fireman or a policeman of the man with whom his family has its most intimate relations outside the family circle.

The question of the motives behind the Wilbur committee's report was, indeed, raised by the New York Medical Society as long ago as last May when its journal said, among other caustic things: "Political and lay control of medicine has always meant deficient service to the people, with lowered morale and unlimited malingering, enslavement of the physician, decline in the science and art of medicine, increased cost to industry or the taxpayer, or both, and lessened rewards for physicians." With the report itself there also appear two minority reports, the first with exceptionally heavy support, opposing every suggestion of "mass production." This has been given prompt and vigorous indorsement by the American Medical Association, and this has in turn elicited from Mr. Morris Llewellyn Cooke, the new chairman of the Wilbur committee, a public statement in which the spokesmen for orthodox practice are called a "bureaucracy" and denounced for "pussyfooting and compromising." Doubtless there is more of this to come.

Meanwhile the Wilbur report does lay itself open to suspicion by appearing to favor community or state support for what "The Medical Association Journal" calls "medical Soviets" and by making this suggestion overlap upon that of a contract or insurance system. It takes little imagination to see how state support for a kind of medical guild might grow into a political "racket," under which a professional hierarchy would control admission to the guild, the citizen taxed for its support would have no choice of doctor or treatment and the taxpayer's redress for inefficient or perfunctory service would involve something like a Seabury inquiry. The contract system itself is not new. It is pronounced a success in some parts of the world, but has yielded in others a fine crop of unethical practices, as "minority report No. 1" points out. Divorced completely from the idea of state support, the public might concede it the right to prove itself by experiment and experience, but not otherwise.

The theory of the contract system is that when the family man voluntarily agrees to pay a doctor or group a small sum annually for treatment, he and his dependents go to the physician with symptoms instead of advanced ailments. Logically this should result in more preventive work, less serious illness, better fixed incomes for doctors and less cost per capita among all classes. So it has indeed worked out in isolated communities, here and abroad. But, as the minority report shows, no such voluntary system has gone far in Europe without becoming compulsory, while in this country it has usually bred "loss of personal relationship of patient and physician, demoralization of the professions" and numerous abuses. Such testimony does not, however, stand in the way of an experiment which the Wilbur committee and its supporters can make anywhere by getting financial support for a medical center and popular patronage, and by proving then that the system can pay its way without Sovietizing the profession.

The imposition of such a system on the public by propaganda and legislative action cannot be too strongly discountenanced. There is no use saying that the Wilbur committee's system would not go this far, for bureaucracies are never satisfied with small degrees of control over individual liberties. The time to check the growth of such ideas is at their inception, which in this case is the immediate present, and we sincerely hope that the orthodox medical bodies will succeed in doing so.

The Dallas Morning News

MEDICAL COSTS AGAIN

Most of the heated feeling in the medical profession, that arises in the discussion of the costs of medical care, comes out of the suspicion that somebody is charging the reputable physician with gouging his patients. The doctor knows that he is doing more charity work now than ever before and he knows that he does a great deal of his charity work in disguise, lowering his fee out of sympathy with those who would not ask or receive charity as such. He pretends to make out a bill in full, when it is not one-third or one-fourth what he would charge in normal times, and waits without complaint until the patient is able to pay even that reduced sum. Knowing all that, it galls the physician to be put in the position of one who is squeezing all he can out of the public.

But the costs of medical care are too high, notwithstanding the fact that the average physician gets too little for his services and that these are more valuable (because they are more expert) than medical services were ten or twenty or fifty years ago. The proof that they are too high is the fact that thousands of people in need of medical treatment are going without it, because they cannot pay the regular fee and will not take it on a charity basis. Not even the physicians themselves realize how much of this needed practice never comes into private office or public clinic.

It seems to the public that the medical profession is too much on the defensive, as if it were up to the public to present and prove a case. That is not the situation. The burden is on the medical profession, to realize the grievous ills of the present arrangement to the doctor, to the patient and to the would-be patient. Dealing in terms of doctor and patient will never settle the matter. The would-be patients who cannot pay the present levels of medical charges are really numerous. Thousands of them could pay, if the basis of pay were different and lower.

The report which is being discussed by the laity and the profession is not perfect and is admittedly sketchy. The laity is positive only that the present system must be improved. It has the notion that the doctors ought themselves to originate the improvement, leaving due room for a fair return to the practitioner of legitimate medicine. But, in refusing to acknowledge possibility of betterment or to agree on suggestions in the direction of betterment, the doctors hurt their cause most of all. In doing so they act, not with bad intent, but with woeful want of appreciation of the seriousness of the burden to the ordinary man who is trying to meet the costs of keeping well himself and the members of his family.

The New York Evening Post

THE WILBUR REPORT

The medical world and the world at large should be very wary about accepting the majority report of the Committee on the Costs of Medical Care of which Secretary of the interior Ray Lyman Wilbur is the chairman. It recommends, as the

Times briefs it, "socialization of medical care for the people of the United States, based on a system of group taxes and group payments, with community medical centers to provide complete medical service, both preventive and therapeutic, in return for weekly or monthly fees, in the form of insurance, taxation, or both."

We consider this program doubtful in wisdom. It is dangerous from the standpoint of the patient. It creates malingerers. It makes self-pitying hypochondriacs out of people who are free to go to a physician at any time without extra cost.

Secondly, it is bad for the physician. The best physician has been the highly individualistic "old country doctor." The worst has been the "company doctor." Secretary Wilbur's socialization plan seeks to turn the first into the second.

More than that, we believe the plan looks like one more effort to take a vast field of individual action and turn it over to operation by "groups." It recommends the extension of all basic public health services. At a time when we are trying to analyze just how far we can afford our present "socialization" expense Secretary Wilbur comes along and claps another charge upon us.

Heaven knows that the cost of medical and especially hospital care has gone far beyond the point where it can function fairly to meet its needs! But the Wilbur report cannot solve the problems. In the main it tries to dull individual initiative and redistribute expense instead of actually cutting down costs.

The Philadelphia Record

MEDICINE—COMBINATION OF MODERN SCIENCE AND MEDIEVAL ETHICS

"In general, pride is at the bottom of all great mistakes."
—Ruskin, Morals and Religion.

What's wrong with medical practice?

An eminent committee headed by Secretary of the Interior Ray Lyman Wilbur, arch-reactionary, has spent a lot of time and money trying to answer this question, and has succeeded only in out-Wickershamming the Wickershammers.

Characteristic of this topsy-turvy time, the conservatives have delivered a majority report which involves radical socialization of medicine under bureaucratic government control.

The Record, as a liberal newspaper and a sincere admirer of the great service the medical profession has rendered humanity, resents and denounces such a suggestion. Of all the professions, medicine has responded more sincerely and immediately to scientific discovery. To endanger a continuance of this progress by shackling medicine to political control is to sacrifice one of the greatest assets of our civilization.

But while the majority recommends such an obviously improper remedy, neither majority nor minority report dares to place the blame for the present problem where it belongs,—on the doctors.

Progressive as medicine has been scientifically just so retrogressive has it been ethically. Doctors have clung to an ancient code of conduct that does not belong in this material age. They have taken inordinate pride in a system of ethics which is as outmoded as it is false. That's the reason physicians find themselves in the impossible situation where the majority of them, who are serving the community ably and faithfully, do not receive a decent living in return.

It is the pretense of medical ethics that the doctor dedicates his life to service for humanity and receives his living from whatever bounty the community cares to accord him. To attempt to apply this medieval ethical system to the modern world has resulted in many absurdities and injustices.

For instance, doctors donate their services to hospitals and hospital clinics. Most of them have no fixed rate of pay, but charge their patient in accordance with their judgment of his ability to pay. This is a relic of a medieval system when the shopkeeper charged the nobleman more than the commoner, but does not fit well into a society where the one-price system is an essential of all business ethics.

The Record is a true friend of the physician, at it has proved itself to be on many occasions by its fights against quackery and cultism. Because it is a true friend, it is its duty to point out the faults of the profession in the hope that doctors will cure themselves and avoid outside intervention.

What medicine needs more than anything else is a new ethical code as up to date and scientific as its therapeutics.

Doctors should be paid by hospitals. They should have fixed rates, which should be shown to any prospective patient. They can well combine in groups but under their own control and without Government subsidy, which means eventual political domination.

Doctors must rationalize professional pride, and accept the humble, usual system of business ethics, according to which the rest of us conduct ourselves.

* * *

If medicine will provide less expensive care for the poor and for the middle classes, if it will relax that wall of professional ethics that has grown beyond its usefulness, if it will recognize social duties as well as individual rights, it need not fear socialization.

The Record, for one, has too great a faith in the intelligence and humanity of the medical profession to think that it cannot cure itself of what are, after all, minor faults. This plea for socialization need not be taken seriously.

Advancement of medical science demands medical centers with equipment and specialists. But this does not necessitate Government subsidy and bureaucratic control.

Medicine must not be socialized.

Association News

THE MILWAUKEE SESSION

Scientific Exhibit Section Exhibits

Twelve sections of the Scientific Assembly have appointed committees to assist in the promotion of section exhibits at the Milwaukee Session, and in the coordination of activities between the Scientific Assembly and the Scientific Exhibit. Chairmen of the section exhibit committees are as follows:

PRACTICE OF MEDICINE:
L. G. Rowntree, Philadelphia.

OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY:
E. D. Plass, Iowa City.

OPHTHALMOLOGY:
Parker Heath, Detroit.

LARYNGOLOGY, OTOLOGY AND RHINOLOGY:
Austin A. Hayden, Chicago.

PEDIATRICS:
F. Thomas Mitchell, Memphis, Tenn.

NERVOUS AND MENTAL DISEASES:
Thomas J. Heldt, Detroit.

DERMATOLOGY AND SYPHILOLOGY:
Fred D. Weidman, Philadelphia:

PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH:
Paul A. Davis, Akron, Ohio.

UROLOGY:
Russell S. Ferguson, New York.

ORTHOPEDIC SURGERY:
Eugene B. Mumford, Indianapolis.

GASTRO-ENTEROLOGY AND PROCTOLOGY:
A. H. Aaron, Buffalo.

RADIOLOGY:
James T. Case, Chicago.

Application blanks for space in the Scientific Exhibit may be obtained from any of the foregoing chairmen or from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 9:45 to 9:50 a. m. (central standard time) over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

December 12. A Safe Christmas.
December 14. Growing Old Sensibly.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 over Station WBBM.

The subject for the week is as follows:

December 17. The Price of Worry.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society News.—The Chicot County Medical Society was addressed at its meeting in October by Dr. Andrew G. Payne, Greenville, Miss., on "Intestinal Obstruction: Its Early Diagnosis and Treatment."——Speakers before the Ouachita County Medical Society in Camden, November 3, were Drs. Robert T. Lucas, Shreveport, on "Diarrheas in Children, Associated with Respiratory Infections"; Clarence B. Erickson, Shreveport, common skin diseases, and Allie C. Kolb, Hope, abnormal personalities.

CALIFORNIA

University News.—Dr. Lewis J. Pollock, professor of neurology, Northwestern University Medical School, Chicago, held a clinical demonstration at the University of California Medical School, November 2.——Dr. John MacKenzie Brown, Los Angeles, has been appointed professor and chief of the department of laryngology, rhinology and otology in the University of Southern California School of Medicine.

Annual Registration Due January 1.—All practitioners of medicine and surgery holding licenses to practice in California are required by law to be registered annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of $1. Failure to pay the required fee within sixty days after January 1 works an ipso facto revocation of a license. Thereafter a license may be reissued only after application and the payment of a $10 penalty.

CONNECTICUT

Annual Registration Due During January.—All practitioners of medicine and surgery holding licenses to practice in Connecticut are required by law to be registered during January, with the state department of health, and at that time to pay a fee of $2. Licentiates who have retired from active practice or who live out of the state must register annually but need not pay a fee. A practitioner failing to register is subject to a fine of not more than $5.

FLORIDA

Annual Registration Due January 1.—All practitioners of medicine and surgery holding licenses to practice in Florida are required by law to be registered annually on or before January 1, with the secretary of the state board of health, and at that time to pay a fee of $1. A licentiate failing to register annually is subject to a fine of not more than $50.

Annual Public Health Meeting.—A program designed to work out the harmonious relationship between the public health worker and the private practitioner was offered at the fourth annual meeting of the Florida Public Health Association in Ocala, December 5-7. It included the following speakers:

Dr. Gerry R. Holden, Jacksonville, president, Florida Medical Association, Cancer, A Public Health Problem—Its Early Diagnosis.
Dr. William DeKleine, Washington, D. C., Factors Influencing Trends in Pellagra.
Dr. Timothy F. Murphy, Washington, D. C., Mortality Trends.
J. Howard Brown, D.Sc., Baltimore, Septic Sore Throat.
Walter H. Eddy, Ph.D., Teachers College, Columbia University, New York, Basic Facts in Nutrition.
Dr. Charles W. Stiles, Winter Park, Hookworm Prevalence and Its Importance.
Dr. Mark F. Boyd, Tallahassee, Malaria Facts for Health Officers.
Dr. Louis L. Williams, Jr., Washington, D. C., Malaria Control.
Dr. Thomas H. D. Griffitts, Jacksonville, Air Traffic in Relation to Public Health.
Dr. William S. Manning, Jacksonville, Refraction Defects in School Children.
F. L. Adams, D.D.S., Tampa, Mouth Hygiene.
Dr. Francis A. Copp, Jacksonville, Essentials in a Venereal Disease Program.
Dr. Victor H. Bassett, city health officer, Savannah, Ga., Municipal Health.

Guest speakers at the banquet, December 6, included Drs. Thomas H. Wallis, Ocala, president of the Marion County Medical Society; Henry C. Dozier, Ocala, past president, Florida Medical Association, and Frederick F. Russell, general director, International Health Division of the Rockefeller Foundation, New York.

ILLINOIS

Society Observes Fortieth Anniversary.—The Bureau County Medical Society, Princeton, celebrated its fortieth anniversary, November 7, with an orthopedic clinic and scientific program. Dr. Hugh E. Cooper, Peoria, conducted the clinic, and Drs. James H. Hutton and Nelson M. Percy, Chicago, spoke on "Thyroid and Ovarian Disturbances at Puberty and the Menopause" and "Goiter," respectively.

Chicago

Society News.—The Chicago Society of Internal Medicine will be addressed, December 19, by Drs. Robert E. Johannesen on "Parathyroid Tetany," and James B. Graeser, Chicago, and Ching Wu, Peiping, China, "A Comparison of Physical Findings and X-Ray Signs of Lobar Pneumonia."

General Practitioner's Night.—A symposium on pediatrics will be conducted before the Chicago Medical Society at its meeting, December 14, designated as "general practitioner's night." The speakers will be Drs. Charles Schott on "Causes of Obscure Fever in Infancy and Childhood"; John A. Bigler, "Causes of Pus in the Urine in Infancy and Childhood," and Julius H. Hess, "Present Status of Serum Therapy in Pediatrics." The discussion will be led by Drs. George E. Baxter, Robert A. Black, Isaac A. Abt, Joseph Brennemann and Clifford G. Grulee.

IOWA

Society News.—Dr. Christian B. Luginbuhl, Des Moines, addressed the Boone and Story county medical societies, October 20, on "Cardiac Manifestations of Goiter."——Speakers before the Crawford County Medical Society, October 25, included Drs. Thomas L. Houlton, Omaha, on "Pathology and Treatment of Acute Anterior Poliomyelitis," and John Jay Keegan, Omaha, "Special Diagnostic and Therapeutic Procedures in Surgical Infections of the Central Nervous System."——Dr. Johann Erwin von Graff, Iowa City, spoke on "Uterine Bleedings" and "Most Common Diagnostic Errors in Gynecology" before the Dallas-Guthrie Medical Society in Panora, October 20.——At a meeting of the Madison County Medical Society in Winterset, October 10, Drs. W. Eugene Wolcott and Daniel J. Glomset, Des Moines, discussed "Pathogenic Streptococci in Their Relation to Chronic Arthritis" and "Rheumatic Disease," respectively.——Dr. Ralph H. Parker, among others, addressed the Des Moines Academy of Medicine and the Polk County Medical Society, November 29, on "Treatment of Acute Mastoiditis."

LOUISIANA

Annual Renewal Due January 1.—All practitioners of medicine and surgery holding certificates to practice medicine in Louisiana are required by law to renew those certificates annually on or before January 1, with the secretary-treasurer of the state board of medical examiners, and at that time to pay a fee of $2. The board may by unanimous vote revoke any certificate not renewed.

Health at New Orleans.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended November 26, indicate that the highest mortality rate (23.3) appears for New Orleans and for the group of cities, 11. The mortality rate for New Orleans for the corresponding period last year was 14.3 and for the group of cities, 10.5. The annual rate for eighty-five cities was 11 for the forty-seven weeks of 1932 as against a rate of 11.8 for the corresponding period of 1931. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

MAINE

Personal.—Dr. Arthur Paul Wakefield, Boston, has assumed his duties as superintendent of the Central Maine Sanatorium, at Fairfield, succeeding Dr. John F. Shaw, who held the position for eighteen years.

MASSACHUSETTS

Professorship Endowed in Physician's Will.—Dr. William Lambert Richardson, who died, October 20, bequeathed $100,000 to Harvard University for the endowment of a professorship of obstetrics with the stipulation that the income be used solely for the professor's salary. Dr. Richardson also provided $40,000 for the establishment of the Jeffrey Richardson Fellowship, the income to be given annually to some deserving student desiring to continue his studies after graduation either in this country or abroad. His library, with the

exception of his medical books, was also left to the university. The medical books were given to the Boston Medical Library. Other bequests provided for in the will include $50,000 to the Perkins Institution and Massachusetts School for the Blind; $10,000 to the Industrial School for Crippled Children, and $25,000 to the Boston Home for Incurables, all in Boston. Dr. Richardson graduated from Harvard University Medical School in 1867. He was dean of the school from 1893 to 1907.

Society News.—Dr. Wilson F. Phillips, Boston, among others, addressed the New England Physical Therapy Society, Boston, November 16, on "Pathologic Changes in Arteriosclerosis."——Dr. Edward L. Keyes, New York, addressed the second annual meeting of the Neisserian Medical Society, Boston, November 17, on "The Purposes of Therapy."——Kurt H. Thoma, D.M.D., Boston, conducted a clinic on lesions of the jaw before the New England Roentgen Ray Society, Boston, November 18.——Dr. Joe Vincent Meigs, Boston, will address the Worcester District Medical Society at Worcester, December 14, on "Uterine Bleeding."——Dr. Henry A. Christian addressed the South End Medical Club, Boston, November 15, on "Bedside Diagnosis of Heart Disease."——The Franklin District Medical Society was addressed, November 10, by Dr. William R. Ohler, Boston, on "Diseases of the Thyroid Gland."——Speakers before the New England Pediatric Society in Boston, December 9, included Dr. Bret Ratner, New York, on "The Allergic Child."——Dr. Morris Fishbein, editor of THE JOURNAL, will address the William Harvey Society of Tufts College Medical School, January 12, on "The Art and Practice of Medical Writing."——Dr. Walter B. Cannon, Boston, addressed the Suffolk District Medical Society, November 30, among others, on "How Emotions Disturb the Body."

MICHIGAN

Plan to Care for Indigent Sick.—A contract between the Saginaw County Medical Society and the Central Hospital Council to care for indigent aged and afflicted persons was authorized, October 24, by the Saginaw board of supervisors. The plan, which, it is believed, will result in a saving to the county of more than $15,000 annually, was one of the recommendations of a special economy committee. As described in a newspaper report, the plan, submitted by the Saginaw General, St. Luke's and St. Mary's hospitals, offers care for indigent and afflicted persons at the special rates of $2.70 a day for the first $10,000 of county business, at a discount of 15 per cent for the second $10,000 and a discount of 20 per cent for the third $10,000. The medical society will care for patients at the hospital for 25 per cent of the hospital bill. It will establish clinics at each hospital to be conducted one day each week with a clinic director in charge. Treatment and examination are to be given at the clinics, the former at $1 each exclusive of materials used, and the latter at $5 each. If persons are later sent to the state hospital at Ann Arbor, no additional examination fee will be charged.

MINNESOTA

Annual Registration Due During January.—All practitioners of medicine and surgery holding licenses to practice in Minnesota are required by law to be registered annually during January, with the secretary of the board of medical examiners, and at that time to pay a fee of $2. A licentiate who practices without renewing his license is guilty of a misdemeanor and is subject to prosecution.

Personal.—Samuel C. Lind, Ph.D., director, School of Chemistry, University of Minnesota, Minneapolis, has been appointed editor of the *Journal of Physical Chemistry*, effective December 1. According to *Science*, a board of eight assistant editors, four in this country and four in England, has been appointed. Professor Lind succeeds Wilder D. Bancroft, LL.D., of Cornell University, who had been editor of the journal since he established it thirty-six years ago.

MISSISSIPPI

Society News.—Dr. Lawrence W. Long, Jr., Jackson, among others, addressed the Central Medical Society in Yazoo in October on "Spinal Anesthesia in Obstetrics."——Speakers before the East Mississippi Medical Society, October 20, included Dr. John J. Shea, Memphis, on "Fifteen Years' Experience with Sinus Infection with Children."——At a meeting of the Delta Medical Society at Greenwood, October 12, among others, Drs. James P. Wiggins, Cleveland, and Guy A. Caldwell, Shreveport, La., spoke on "Chronic Otitis Media" and "Treatment of Fractures of the Extremities," respectively.——The Issaquena-Sharkey-Warren Counties Medical Society was addressed at Vicksburg, November 8, by Dr. Isaac C. Knox, Vicksburg, on "Childhood Tuberculosis"; Dr. Sydney W. Johnston, Vicksburg, on "Vesical Calculus," and Walton Shannon, D.D.S., Jackson, "Relation of Impacted Wisdom Teeth to Disease."

NEW YORK

Laboratory Meeting.—The New York State Association of Public Health Laboratories held its autumn meeting in Albany, November 4. Among speakers were Drs. Ernest W. Goodpasture, Nashville, Tenn., on "Fowlpox, Molluscum Contagiosum and Vaccinia"; Leo F. Schiff, Plattsburg, "Use of Convalescent Serum and Whole Blood in a Small Epidemic of Measles," and Francis F. Harrison, Cooperstown, "Agranulocytosis." Ralph W. G. Wyckoff, Ph.D., New York, presented a film demonstrating the growth of bacteria.

Annual Registration Due January 1.—All practitioners of medicine and surgery in New York are required by law to apply annually, on or before January 1, to the secretary of the board of medical examiners for a certificate of registration on blank application forms to be furnished by him and to pay at such time a fee of $2. The law authorizes the secretary of the board to permit secretaries of duly incorporated medical societies to act as his representatives to receive and transmit to him such application forms and fees. Practitioners are subject to severe penalties for failing to register and for continuing in practice thereafter.

New York City

Personal.—Dr. Armitage Whitman has been appointed a member of and orthopedic surgeon to the Public Health Council of the New York State Department of Health.——Dr. Floyd S. Winslow, Rochester, was recently elected president of the Cornell Alumni Corporation, which comprises 50,000 graduates of Cornell University.——Dr. Moses D. Lederman was recently made an honorary fellow in the Madrid Oto-Laryngological Society; he attended the International Otological and Laryngological Congress in Madrid as a delegate from the American Laryngological, Rhinological and Otological Society.

Hospital News.—A clinic for treatment of cross eyes and industrial blindness by means of corrective exercises was opened at the Fifth Avenue Hospital, November 21, under the direction of Dr. Le Grand H. Hardy.——New York Post-Graduate Hospital announces that a few patients with cancer of the respiratory tract can be accepted for diagnosis and treatment for two weeks each under the terms of the Littauer Fund.——Dr. Joel E. Goldthwait, Boston, presented an address on "Diagnosis and Treatment of Backache" before the clinical society of the New York Polyclinic Medical School and Hospital, December 5. Dr. Garry Hough, Springfield, Mass., will speak on muscular dystrophy, December 13.

NORTH DAKOTA

Annual Registration Due January 1.—All practitioners of medicine and surgery holding licenses to practice in North Dakota are required by law to register annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and to pay a fee of $5, if a resident of North Dakota, or $2, if a nonresident. A practitioner may not practice if he has not registered. If he nevertheless continues in his practice his license may be revoked and can be reinstated thereafter on the payment of the delinquent fees and 50 cents for each month of default.

OKLAHOMA

Society News.—Dr. Tracey H. McCarley, McAlester, among others, addressed the Southeastern Oklahoma Medical Association, at a meeting at Roebuck Lake, near Hugo, October 20, on pneumonia in childhood.——Drs. John H. Hutchings White, Muskogee, and Leonard S. Willour, McAlester, among others, addressed a joint meeting of the Muskogee County Medical Society with the Okmulgee-Okfuskee County Medical Society at Okmulgee, October 10, on "Purulent Peritonitis" and "X-Ray Therapy in Graves' Disease," respectively.

PENNSYLVANIA

Annual Registration Due January 1.—All practitioners of medicine and surgery holding licenses to practice in Pennsylvania are required by law to register annually, on or before January 1, with the board of medical education and licensure in the department of public instruction and to pay a fee of $1, or such fee as may be fixed by the department of public instruction. A practitioner who fails to register and who continues to practice is subject to a fine of from $10 to $100.

Society News.—The Pittsburgh Ophthalmological Society and Pittsburgh Otological Society held a joint meeting, November 28, at which was presented a symposium on pathology of the nose and throat involving the eye. Speakers were Drs. James Homer McCready, John B. McMurray, George J. McKee, Hunter H. Turner, Thomas B. McCollough and Edward Stieren.——Dr. Philip J. Lukens, Ambler, discussed medical economics at a meeting of the Northampton County Medical Society, Bethlehem, November 18.——Dr. Lester Luxenberg, among others, addressed the Clearfield County Medical Society at Philipsburg, November 17, on ambulatory treatment of chronic leg ulcers.——Dr. Cornelius C. Wholey, Pittsburgh, presented a motion picture demonstrating a case of multiple personality at the meeting of the Fayette County Medical Society, Uniontown, December 1.

Philadelphia

County Society Commends Minority Report.—The Philadelphia County Medical Society at a meeting, November 30, passed a resolution commending the stand and action of those physicians who submitted the minority report as incorporated in the final report of the Committee on the Costs of Medical Care. The resolution further stated that the society is in hearty accord with the recommendations contained in the minority report.

Fund for Research on Blindness.—A trust fund of $10,000 to establish awards for research in ophthalmology was left to Temple University in the will of Mrs. Julia Spencer Smith, Philadelphia. At the end of ten years the trustees may continue the trust or terminate it and apply the principal to laboratory work. The will also bequeathed $5,000 to the city to endow a free bed in the Wills Hospital and $5,000 to the Frankford Hospital to endow a free bed.

New Wills Hospital Dedicated.—Wills Hospital, founded one hundred years ago with a bequest of $116,000 from an obscure grocer, formally opened and dedicated a new six-story building with a capacity for 200 patients, November 12. This is said to be the largest hospital in the world devoted entirely to treatment of diseases of the eye. In addition to three large clinics and extensive operating suites, the new building provides space for ear, nose and throat clinics, isolation and children's wards, special wards for patients with cataracts and departments for x-rays, radium and physiologic optics. One floor is reserved for private patients; the top floor is the nurses' residence and the quarters of the resident physicians are on the second floor. It was said that 27,000 nonpaying patients were treated in the hospital last year.

TEXAS

Annual Registration Due January 1.—All practitioners of medicine and surgery holding licenses to practice in Texas are required by law to be registered annually on or before January 1 with the state board of medical examiners, and at that time to pay a fee of $2. If a practitioner fails to renew his registration within sixty days after January 1, his license is suspended.

VERMONT

Practitioner Honored.—Dr. Cyrus U. Johnson, West Berkshire, was the guest of honor, November 16, at a banquet arranged by his friends in the several towns in the community. Dr. John H. Blodgett, Bellows Falls, vice president of the Vermont State Medical Society, made the principal address, on "The Call to Service and the Country Doctor." Other speakers were Drs. Charles G. Abell, Enosburg Falls; Laurel E. Samson, Franklin, and Rollin M. Pelton, Richford. Dr. Johnson, who was graduated from the University of Vermont College of Medicine in 1888, is 69 years old and has practiced forty-four years in West Berkshire. Other towns represented at the dinner were Franklin Center, South Franklin, East Franklin, Frelighsburg, North and East Berkshire and Berkshire Center.

WEST VIRGINIA

Society News.—Dr. Joseph F. McCarthy, New York, addressed the Ohio County Medical Society, Wheeling, December 2, on "The Concern of General Medicine in Urology." Dr. Richard A. Bolt, Cleveland, addressed the society, November 18, in Wheeling, on maternal and early infant mortality.——Dr. Robert M. Wylie, Huntington, addressed the Logan County Medical Society, October 18, at Logan, on "Modern Diuretics."——Dr. Walter E. Vest, Huntington, addressed the Cabell County Medical Society, October 27, on visceral syphilis.——Drs. Herbert H. Haynes and James G. Ralston, Clarksburg, addressed the Kanawha County Medical Society, Charleston, October 11, on sadism and on spinal anesthesia, respectively.

GENERAL

Stolen Microscopes.—It has been reported to the American Medical Association that microscopes are being systematically stolen from the offices of physicians in Detroit and surrounding towns. The thief apparently uses master keys to enter offices during the noon hour when attendants are absent. He appears to be familiar with the instruments. It was also reported that gold is being stolen from dentists' offices, apparently by the same man.

Magazine for Diabetic Patients.—The first issue of *Diabetes* appeared in November. An editorial announces that the magazine will contain practical articles on diet, treatment and general subjects of importance to persons suffering from diabetes. In addition to special articles it will carry departments for recipes, reports of discoveries and other news involving diabetes, book reviews and letters from readers. Drs. Frederick M. Allen, New York, Henry J. John, Cleveland, and William D. Sansum, Santa Barbara, Calif., make up the advisory editorial board.

Changes in Status of Licenses.—The California board of medical examiners reports the following:

Dr. Robert H. MacLauchlan, San Francisco, was placed on probation, September 2, on his plea of guilty to a charge of forging narcotic prescriptions. Probation was given on condition that Dr. MacLauchlan would return at once to Canada and take treatment for narcotic addiction. Dr. MacLauchlan's license had been revoked, July 14, for violation of a similar probation imposed, July 9, 1931, when his license was restored; it had been suspended, Oct. 30, 1930, for aiding and abetting an unlicensed practitioner (THE JOURNAL, Sept. 10, p. 922).

The Massachusetts Board of Registration in Medicine reported the following action taken at its meeting, November 10:

The license of Dr. James P. McCue, Hudson, suspended May 12, was restored.

Honorary Membership in Tropical Medicine Society.—At the annual meeting of the American Society of Tropical Medicine in Birmingham, Ala., November 18, honorary memberships were conferred on the following: Sir Henry S. Wellcome and Dr. Charles Morley Wenyon of the Wellcome Bureau of Scientific Research, London; Prof. Friederick Fulleborn, Institut für Schiffs- und Tropenkrankheiten, Hamburg, Germany; Drs. Charles Wardell Stiles, Washington, D. C., William Sydney Thayer, Baltimore, and Frederick G. Novy, Ann Arbor, Mich. Officers of the society were elected as follows: Major George R. Callender, Fort Sam Houston, Texas, president; Drs. Andrew W. Sellards, Boston, and Wilbur A. Sawyer, New York, vice presidents, and Henry E. Meleney, Nashville, Tenn., and Damaso de Rivas, Philadelphia, secretaries. The next session will be held in Richmond, Va., in conjunction with the meeting of the Southern Medical Association, November, 1933.

Society News.—Dr. Edwin Henes, Jr., Milwaukee, has resigned as executive secretary of the Inter-State Postgraduate Medical Association, on account of poor health, after ten years' service. Dr. Henes' work will be continued by Drs. Tom B. Throckmorton, Des Moines, Iowa; Arthur G. Sullivan, Madison, Wis., and William B. Peck, Freeport, Ill.——Dr. Irvin Abell, Louisville, Ky., was elected president of the Southern Medical Association at the annual session in Birmingham, Ala., November 18. Drs. James R. Garber, Birmingham, and Hugh J. Morgan, Nashville, Tenn., were named vice presidents. The 1933 convention will be held in Richmond, Va. The association adopted a resolution disapproving the hospitalization of veterans with disabilities not traceable to war service and the further erection of government hospitals.——The Society of American Bacteriologists will hold its annual meeting in Ann Arbor, Mich., December 28-30, under the presidency of Edwin B. Fred, Ph.D., Madison, Wis. The tercentenary of the birth of Anton Leeuwenhoek will be commemorated.

Deaths in Other Countries

Alexander A. Redlich, former professor of obstetrics and gynecology in the Petrograd Military Medical Academy, died, aged 62, at Cologne, Germany, November 5, following an operation.——**Alfred Bostock Hill,** emeritus professor of hygiene and public health, Birmingham University, England, died, November 6, aged 78.

CANADA

University News.—Harold Benjamin Fantham, Sc.D., professor of zoology and comparative anatomy at the University of Witwatersrand, Johannesburg, South Africa, since 1917, has been appointed head of the department of zoology at McGill University, Montreal, succeeding Arthur Willey, Sc.D., now professor emeritus. Dr. Fantham is a former president of the South African Association for the Advancement of Science and of the South African Biological Society.

Personal.—Dr. Henry K. MacDonald has been appointed head of the department of surgery at Dalhousie University School of Medicine, Halifax, N. S., to succeed Dr. Edward V. Hogan. Dr. MacDonald has been associated with the department of clinical surgery since 1914.——Dr. Herbert A. Bruce, Toronto, took office, November 1, as the fifteenth lieutenant governor of Canada. The post had been vacant for a year.——Dr. Prescott A. Creelman, Charlottetown, P. E. I., has resigned as chief health officer of Prince Edward Island and has been succeeded by Dr. Benjamin C. Keeping.

Mickle Fellowship Awarded.—The Charles Mickle Fellowship of the University of Toronto has been awarded to Gaston Leon Ramon, Sc.D., director of the Pasteur Institute farm at Garches, France, in recognition of his work on diphtheria toxin, anatoxin of diphtheria and practical methods for community protection against infectious disease. The fellowship is awarded each year to the member of the medical profession who is considered by the faculty of medicine of the university to have contributed most to the advancement of medical art or science during the preceding ten years. It is the annual income from an endowment of $25,000 bequeathed to the university by the late Dr. W. J. Mickle.

Faculty Changes at Toronto.—Appointments effective for the current year in the University of Toronto Faculty of Medicine include the following physicians:

Robert D. Defries, professor of hygiene and epidemiology.
Donald T. Fraser, professor of hygiene and preventive medicine.
A. M. Wynne, associate professor of biochemistry.
Paul J. Moloney, associate professor in the department of chemistry with relation to hygiene.
Edmund P. Lewis, assistant professor of psychiatry.
Henry A. Beatty, assistant professor of surgery.
Neil E. McKinnon, assistant professor of hygiene and epidemiology.
Jabez H. Elliott, professor of the history of medicine.
Eric A. Linell, professor of neuropathology.
Norman B. Taylor, professor of physiology.
George Shanks, assistant professor of pathology.

Dr. Fraser and Dr. Charles H. Best were appointed associate directors of Connaught Laboratories.

Society News.—Dr. Victor D. Davidson, St. John, was elected president of the New Brunswick Medical Society and Dr. Kenneth A. MacKenzie, Halifax, of the Nova Scotia Medical Society at the recent provincial meetings.——Drs. William D. Patton and William N. Kemp addressed the Vancouver Medical Association, November 1, on "Blood Cholesterol in Polycythemia and Pernicious Anemia" and "Status Lymphaticus, an Adrenal-Thyroid Syndrome," respectively.——Dr. George R. Minot, Boston, addressed the Toronto Academy of Medicine, November 2, on treatment of anemia. The section on preventive medicine and hygiene presented a symposium on prevention of mental illness, November 24, in which the speakers were Drs. Roy B. Richardson, on the value of psychoanalysis; George H. Stevenson, the organic side of mental illness; Wilhelm E. Blatz, research in mental medicine, and Robert G. Armour, the general problem.——Dr. Harry A. Gibson, Calgary, was elected president of the Alberta Medical Association; Dr. Adam F. Menzies, Morden, of the Manitoba Medical Association, and Dr. Charles N. DeBlois, Three Rivers, of the Medical Association of the Province of Quebec, at the recent annual meetings.

Government Services

Change of Station in the Navy

Lieut. Comdr. Warwick T. Brown, from second brigade, U. S. Marines, Nicaragua, to naval hospital, Great Lakes, Ill.
Lieut. Comdr. Hardy V. Hughens, from Guardia Nacional, Nicaragua, to the U. S. S. *Chicago*.
Lieut. Comdr. Thomas L. Morrow, from the second brigade, U. S. Marines, Nicaragua, to the naval hospital, Boston.
Lieut. Harry J. Scholtes, from Guardia Nacional, Nicaragua, to the naval hospital, New York.
Lieut. Clifton A. Young, from the Nicaraguan National Guard Detachment to the naval dispensary, San Pedro, Calif.
Lieut. Robert C. Douthat, from the second brigade, U. S. Marines, Nicaragua, to the U. S. S. *Altair*.
Lieut. Warren G. Wieand, from the second brigade, U. S. Marines, Nicaragua, to the U. S. S. *Arkansas*.
Lieut. Comdr. William H. H. Turville, from Nicaragua to the submarine base, Coco Solo, Canal Zone.
Lieut. Freeman C. Harris, from the second brigade, U. S. Marines, Nicaragua, to Destroyer, Division 16.
Lieut. Comdr. Victor B. Riden, from Nicaragua, to instructor, naval hospital, San Diego, Calif.
Lieut. Earl F. Evans, from naval hospital, Parris Island, S. C., to instructor, naval medical school, Washington, D. C.
Lieut. Edgar L. Nefflen, from navy yard, Boston, to instructor, naval medical school, Washington, D. C.
Lieut. Ralph H. Hofler, from Norfolk Naval Hospital, Portsmouth, Va., to instructor, naval medical school, Washington, D. C.
Lieut. Comdr. Desse A. York, from navy recruiting station, New Orleans, La., to U. S. S. *Brazos*.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 12, 1932.

Asthma Research

The Asthma Research Council differs from all similar bodies in that its funds are largely derived from sufferers from the disease who thought that a special effort should be made for further investigation. It has an income of about $8,000, which is expended on research. It has organized asthma clinics at Guy's Hospital, the Hospital for Sick Children, Great Ormond Street, St. Mary's Hospital and the Leeds General Infirmary, where about 2,000 needy patients have been treated in the year ended October 31, for which the report has been published. An asthma research club has been formed, at which problems are discussed by physicians and laboratory workers who are making a special study of the disease.

THE URINARY PROTEOSE

At Guy's Hospital the "urinary proteose," mentioned in the report published in THE JOURNAL, Sept. 12, 1931, page 789, which in doses of one ten-millionth gram produces attacks in asthmatic patients while large doses have no effect on healthy persons, has formed the main preoccupation. During the asthmatic paroxysms, profound changes occur in the blood and urine and this substance is excreted in relatively large amounts. It probably contains the albuminous complex to which the patient is sensitive and also a protective substance elaborated against it by the organism. The subjects of hay fever excrete a similar or identical proteose. Though all asthmatic patients excrete a proteose during a paroxysm, it is unusual for one asthmatic person to react to another's proteose. But in cases of specific sensitization, such as horse asthma, the proteose is similar and one patient will react to the proteose of another. By further study it is hoped to analyze the mechanism of the asthmatic paroxysm and understand the more complex forms of the disease. The same methods have proved applicable to the study of eczema and certain forms of rheumatism, in which proteose appears in increased amounts in the urine. One practical result achieved is that it has been found that, while large doses of proteose induce an attack of asthma, small doses desensitize the patient and free him from his malady. A large number of patients have been so treated with highly satisfactory results in some instances.

THE BACTERIOLOGY OF THE SPUTUM

The other main line of research is the bacteriology of the sputum. Many asthmatic sputums contain an organism which has the peculiar property of forming histamine, both in the bronchial secretion and in culture mediums. Histamine may play a dominant part in the asthmatic paroxysm, as it powerfully contracts the bronchial tubes. However, it seems doubtful whether these bacteria induce asthma by the local formation of histamine. In any event the frequency of these bacteria and the happy results sometimes obtained from vaccines made from them show the need of further investigation of their position in the family of bacteria, their seasonal variation and the reason for their predilection for the chest and nasal sinuses of the person with asthma.

TREATMENT OF CHILDREN

For children, dextrose and general hygienic treatment are used. When these fail, open air treatment is advised, as it is felt that every effort should be made to arrest asthma in its initial stage. A brief visit to a convalescent home is useless. The child must remain many months in an environment in which he does not get asthma for the constitution to be ade-

quately strengthened and the habit broken. Both in children and in adults, respiratory exercises have proved valuable, but they rarely cure alone.

UNORTHODOX REMEDIES

The testing of new and unorthodox remedies is a valuable function of the clinic. Many patients spend much time and money to obtain relief but remain asthmatic. It is found that individuals may occasionally derive benefit from the most bizarre treatments, but when these are applied to a group of cases they prove to be of no fundamental value.

THE CHILDREN'S HOSPITAL CLINIC

The asthma clinic at the principal children's hospital in Great Britain, the Hospital for Sick Children, Great Ormond Street, was founded in March, 1929. More than 1,000 children suffering from asthma and allied disorders have been investigated. This figure, obtained in such a short time, with the frequency with which other relatives are affected, suggests that there must be more than a quarter of a million sufferers in the British Isles. The first study was to determine the influence of heredity. It was found that in two out of every three cases some relative or relatives were affected, and twice as frequently on the mother's as on the father's side. Three times as many boys as girls were affected before puberty, after which susceptibility was equal. This suggests that the changes of puberty are beneficial to the asthmatic boy and deleterious to the asthmatic girl. When hereditary influence could not be traced, severe lung illness was nearly always the starting point, and confirmatory evidence was found on roentgen examination of the chest, suggesting that in the damaged lungs inhaled particles bring about the hypersensitive state of the person with asthma. The homes of hundreds of patients were inspected. A majority of the sufferers had decent homes and belonged to the skilled artisan and educated classes living on the outskirts of London or in the country. Often it was the pampered only child that was affected. The most common causative factor appeared to be feathers or horsehair pillows, animal pets and dust. Examination of the stomach contents revealed in the majority of patients deficiency or absence of acid gastric juice, with consequent inability to digest proteins. In these cases asthma can be prevented by improving the conditions of the stomach so that it secretes acid or by supplying it in medicine. It was also found that the liver was deficient in power of dealing with sugar. Many good results were obtained by removing irritating factors from the home.

Copies of the report can be obtained gratis from the secretary of the Asthma Research Council, King's College, Strand, London, W. C. 2.

Artificial Respiration by Rocking

Dr. F. C. Eve, consulting physician to the Royal Infirmary, Hull, has described in the *Lancet* a new method of artificial respiration, which has the advantages that it requires only simple and easily improvised apparatus and can be used in acute illness. It consists in laying the patient on a stretcher, pivoted at its middle on a trestle and rocking up and down rhythmically, so that the weight of the viscera alternately pushes the flaccid diaphragm up and down. Dr. Eve has found this method so efficacious in a healthy person that he need not breathe voluntarily—it is done for him. The amount of air expired with one rocking is 1,500 cc., while Schäfer's method gives only 1,000 cc. Thus the method would easily give more than the 6,000 cc. of air per minute that is said to be necessary.

Dr. Eve illustrates the use of the method by two cases. In a girl, aged 2 years, nasal speech, regurgitation and weakness of the legs and neck were observed a month after the onset of diphtheria. Suddenly she became alarmingly ill and was apparently drowning in her bronchial secretion. The epigastrium did not rise on inspiration. She was put on her side, so that the trachea sloped downward. Breathing became easier, and tenacious mucus could be removed from the mouth. The position was retained for ten hours. It then occurred to Dr. Eve that, while the position was excellent for drainage, there was a risk that the weight of the abdominal viscera might push up the diaphragm and cause some collapse of the lungs with risk of pneumonia, but that if a slow seesaw movement was provided the diaphragm would be pushed up and down in imitation of natural movements. A bed was made in a rocking chair and a towel pinned from one arm of the chair to the other to prevent the child from slipping when the chair was tilted through 30 degrees on each side of the horizontal. This was done continuously ten times a minute for two days except during meals. The child appreciated the rocking, which conduced to sleep. On the third day spontaneous epigastric movements returned. From the tenth day costal respiration ceased for four days, but this caused no symptoms. Recovery slowly ensued. The second patient was a robust man of 24 who had Landry's paralysis. The legs were paralyzed, the arms were weak, and the diaphragm was not moving, but the upper ribs were dragged up by the sternomastoids. Ordinary methods of artificial respiration would not have been tolerated. He was lashed to a stretcher that had been pivoted on a trestle. Artificial respiration was performed by rocking 50 degrees each way, four seconds in the leg-down and three seconds in the head-down position. The rocking relieved him and he demanded it for about five minutes every quarter of an hour. Contractions returned in the diaphragm, but he died from heart failure.

PARIS

(From Our Regular Correspondent)

Nov. 2, 1932.

Congress of Esthetic Surgery

The Congress on Esthetic Surgery, which was established three years ago, has met with considerable success, for it now comprises, in addition to esthetic surgery, plastic and reparative surgery. This year a large number of specialists attended the session, including some from foreign countries. Dr. Dartigues, president of the congress, emphasized the scientific and social value of esthetic surgery. The numerous communications nearly all dealt with the history of cases in which the surgeon was compelled to furnish proof of his skill. Peri of Algiers described the correction of a posttraumatic saddle nose, and then discussed the treatment of rhinophyma with the diathermic bistoury. Mr. Bourget of Paris gave an exposition of his method for the esthetic reparation of the pinna of the ear. Mr. Dartigues furnished details on his method for the transposition of the nipple and the areola in mammectomy. Mr. Lagarde performs mastopexy in the case of a pendulous mamma by introducing an artificial suspensory ligament made of a trifurcate reindeer tendon. For the nose he recommends autografts derived from the parts of the nasal skeleton of the patient. Pierre Robin considered the relations of the denture with the deformations of the facial profile. Mr. Dantrelle explained a treatment for paralysis of the third pair of nerves by means of tenotomy and advancements of the rectus muscles. Mr. Corachan of Barcelona described his method of tubular grafts for the reparation of large losses of skin. Mr. Jiano of Bucharest pointed out a mode of treatment for temporomaxillary ankylosis and reported a case of restoration of the penis and the urethra, the tissues of which had been partly destroyed by a phagedenic ulcer. Mr. Madureira of Lisbon exhibited a circular bistoury; he successfully grafted a nipple from a man to a woman. Mr. Kilner illustrated methods of esthetic reparation of the face and the ears. Mr. Pires of Rio de Janeiro described his method of treating wrinkles of the face and the hands. Mr. Eastman Sheehan of New York exhibited photographs and films in colors illustrating his operations. Mr. Campos of Rio de Janeiro announced a procedure for dispelling

the scars of smallpox and acne by means of repeated applications of mercuric chloride, followed by scarifications and then irradiations with ultraviolet rays. The scars have completely disappeared by the end of from eight to fourteen months.

The French Congress of Hygiene

The French Congress of Hygiene, held annually under the auspices of the Société de médecine publique et d'hygiène sanitaire, brings together the medical hygienists, some of them laboratory scientists, other officials of the sanitary administration, and engineers and architects. The congress was held, this year, at the Institut Pasteur de Paris, under the chairmanship of Mr. Augustin Rey, and was honored by the presence of the minister of public health. Mr. Rey, in his inaugural address, felt it incumbent on him to tell the minister some rather severe truths. He emphasized that the sanitary condition of France is inferior to that of some European countries, since the mortality ranges constantly around 13 per thousand. France has at present 3,000,000 patients. It is puerile to ascribe all the bad conditions to alcoholism. The insanitary conditions in the dwellings play a more important part than alcoholism; likewise the insufficiency of pure drinking water is important. Of 31,000 French communes with less than 20,000 inhabitants, 25,000 still lack a good water supply. Twenty departments have as yet no health inspectors, and the bureau of health in these departments is only one of the administrative services of the prefecture. The fundamental defect in the organization of hygiene in France is that it is still controlled by the law of 1902, and the mistake has been made, for political reasons, of leaving the supervision of hygiene in each commune to the mayor, who is dependent on the electorate for his position and hence can exert no great pressure against the voters. The minister of health admitted the truth of all these statements but added that he was engaged at present in preparing a complete revision of the law of 1902. He promised that the control of the hygienic services would be placed soon in the hands of technicians and be absolutely independent of politics. Mr. Jean Benech, director of the hygienic services of the city of Nancy, read a paper on work accomplished by the medical hygienists, the directors of the municipal hygienic services and the departmental inspectors of hygiene. The work gives evidence of prolonged efforts, but the results are far from complete. Nearly all the progress that has been made is due to their personal action and often lay outside the scope of the law of 1902. The disinfection services are functioning much better than formerly, because the public, being better informed, is beginning to demand more frequently these services, particularly in cases of diphtheria and tuberculosis. But the notification of contagious diseases, which the law imposes on physicians, betrays great negligence on the part of practitioners, who fear to displease their clients, and it is no exaggeration to admit that all the published statistics with reference to the incidence of contagious diseases are incorrect. Cibrié and Drouet emphasized the need of close collaboration between practitioners and official hygienists, as regards the protection of mother and child. Mr. Jacquot described the work accomplished by the physicians of the antituberculosis dispensaries; Mr. Dienert that of the medical hydrologists, and Mr. Paul Gandillon that of the municipal technical engineers. Blayac of Montpellier and Forestier of Aix-les-Bains spoke on the need of a better utilization of the hydrologic resources of the country. Professor Barrier and Dr. Dopff emphasized the advantages of cremation from the points of view of hygiene and urban economy. A number of medical hygienists described the sanitary situation in their respective departments. G. Coulon and J. Santet outlined the organization of the antimalaria campaign in Corsica. Parisot of Nancy read a paper describing the progress in hygiene due to public and private organizations. The head physicians of various railways described their sanitary organizations (dispensaries, sanatoriums, and city gardens for their personnel). Comprehensive reports on methods of technical organization as displayed by the hygienists were furnished by Mr. Tanon, professor of hygiene at the Faculté de médecine de Paris; Mr. Guillet, director of the Ecole centrale des ingénieurs; Professor Heim de Balzac, director of the Institut de technique sanitaire, and Mr. Arnaud, professor of architecture at the Ecole nationale des beaux-arts. Mr. Evrot, associate director of the Comité national de défense contre la tuberculose, spoke more particularly on the training of phthisiologists, and Mr. Cavaillon on the training of physicians for the antivenereal dispensaries. Among the unofficial communications was that of Dr. Brouardel, who would limit the compulsory notification of tuberculosis to bacteriologically and clinically demonstrated cases. The statistics will then be more exact. One can no longer raise the objection that notification would have inadequate practical results, for the means of combating tuberculosis in France have developed in late years and are represented today by 763 dispensaries, 23 schools for the training of visiting nurses, and 34,976 beds in sanatoriums, preventoriums, hospitals and similar institutions. Dr. Shreiber described his method of prenuptial sanitary control, which is the basis of a bill now pending in parliament. He would simply require the civil authorities to demand from applicants for a marriage license a certificate, dated not more than two months previously, attesting that they had submitted to medical examination with a view to proposed marriage. Any demands for more detailed statements in regard to the health of the applicants would tend to abolish marriage and to substitute uncontrolled license.

Deaths

French medicine has suffered a great loss in the death of Dr. J. F. F. Babinski, who died recently at the age of 75. Of Polish extraction, Babinski was born in Paris in 1857 and was one of Charcot's most brilliant pupils. His whole career was devoted to studies on the diseases of the nervous system, in which he made distinct advances that are universally recognized. Special importance attaches to his studies on multiple sclerosis, and his discovery of pathognomonic reflexes. He served as physician in the Hôpital de la pitié and was a member of the Academy of Medicine. His reputation was world wide and he achieved great success as a teacher and as a consultant. Political intrigues prevented him, in his early years, from obtaining an associate professorship at the Faculté de médecine, and he never made a second application. When he reached the age of retirement, his services, by way of exception, were retained as a consultant and an instructor in the Hôpital de la pitié. In his last years, he suffered from Parkinson's disease, a condition that he had feared all his life.

Dr. Babinski's death was followed, a few days later, by that of Professor Chauffard, at the age of 77. Chauffard had a brilliant career. Appointed, in early manhood, hospital physician and associate professor at the Faculté de médecine, he became professor of the history of medicine and, later, professor of internal pathology, and finally was appointed to the chair of clinical medicine, which he held until retired on account of age. He was a member of the Academy of Medicine and in 1923 served as its president. He was Commander of the Legion of Honor. His numerous publications dealt chiefly with pathology of the viscera and, particularly, with that of the liver. He described hemolytic icterus and pointed out the part played by cholesterol in the formation of biliary calculi. Medicine is indebted to him for the description of the syndrome known under the term of Chauffard-Still disease. He wrote monographs on the liver, the pancreas and kindred subjects for the large classic treatises on medicine edited by Bouchard, Charcot and Brissaud, and Brouardel and Gilbert. His lectures at the Hôpital Cochin were popular with the students and with French and foreign physicians. He trained many pupils who have

become masters in their fields. He was of a remarkable family of physicians. His father was professor at the Faculté de médecine de Paris. He married the daughter of the clinician Bucquoy and was the father-in-law of Professor Guillain.

BERLIN

(From Our Regular Correspondent)

Oct. 31, 1932.

Statistics on Causes of Death

In the statistics on the causes of death in the German empire, in 1892, infectious diseases were recorded with great detail, whereas organic diseases and the noncontagious general diseases were often considered in collective groups. The number of deaths registered under these collective groups, and particularly deaths recorded as being due to diseases of the circulatory organs and to cancer, have greatly increased during recent decades. Furthermore, the advances in scientific medicine have made the causes of death appear in a different light than formerly and have awakened great interest in types of disease that formerly were not understood. In accordance with a governmental decree, the official statistics on the causes of death from 1932 on will be elaborated on the basis of the comprehensive international list of the causes of death drawn up in 1929. This international list, on the one hand, takes account of the modern demands of science and of modern ideas pertaining to the administration of public health services, and, on the other hand, places German statistics on a basis that is more comparable with numerous foreign systems. The international list of the causes of death is divided into eighteen groups, with 200 main divisions and sixty-one subdivisions.

Objections have been raised to any considerable further increase in the subdivisions of the causes of death, because of the additional labor and expense involved and the greater chances of error. Nevertheless, a majority in favor of the adoption of the international list was secured. With reference to the causes of death, a distinction must often be made between a fundamental disease, the concomitant and successive disorders and the condition that finally caused death. In statistics on the causes of death, which can consider in every case of death but one cause, only the fundamental diseases are taken into account as the chief causes from the sociohygienic and the scientific points of view. For the purposes of the new statistics, inexact statements on disease symptoms that can be interpreted causally in many different ways, such as inflammation of the lungs or of the peritoneum, or still more general terms such as cardiac weakness, lung disorders, cachexia or coma, reported in the death or necropsy certificates, which constitute the basic original material for the statistics, are by no means adequate. What is required is information on the frequency of the deaths from fundamental diseases precisely described, as, for example, on the various acute infectious diseases; on tuberculosis, syphilis (including sequels), cancer, diabetes, alcoholism, croupous pneumonitis, cirrhosis of the liver, acute nephritis, febrile miscarriage, albuminuria of pregnancy, and fetal death through miscarriage. In case of diseases that attack various organs, such as cancer and tuberculosis, statements in regard to the first or the chief seat of the disease should be added without fail. The comprehensive statistical divisions covering the various kinds of external influences require precise statements with regard to the processes causing death and with reference to the associated circumstances, especially as statistics on some deaths due to violence are utilized, in addition, for certain special purposes, and particularly in connection with experimental prophylaxis.

The Berlin Public Health Service

Twenty-five years ago, the nucleus of a systematic municipal public health service in Berlin was established with the creation of the Untersuchungsamt für hygienische und gewerbliche Zwecke. Since that time, in logical sequence, there developed from that nucleus and after that pattern the central bureau of health: As in other cities, there has been a certain reserve and hesitation manifested in developing a field that for centuries had been designated by the authorities as the most important of all endeavors but that had seldom been treated as such; namely, the field of public health. From the Untersuchungsamt there developed soon a public health administration with all the necessary branches. The bacteriologic and the chemical departments expanded rapidly. There are today many departments—a department embracing the whole hospital system of Greater Berlin; one comprising institutions for chronic patients (hospitals); another including all the therapeutic and care-taking institutions; a sociohygienic department, with which is associated the council on health established by federal enactment, and the scientific institutes. In planning the organization, importance was attached to giving the departments a symmetrical and simple organization, and to arranging the management of the scientific institutes in such a manner that not only the possibility but also the guaranty of a supervision of the whole establishment would be secured by placing in the hands of the director of the bacteriologic institute, who is responsible also for combating epidemics, the management of all the scientific institutes. Such an arrangement has practical advantages. For example, it has sometimes happened that a food chemist has been instructed by some authority to investigate an outbreak of poisoning. A careful search would be made for toxins and the possibility of bacteriologic infection would be entirely overlooked; or, vice versa, a bacteriologist would fail to think of the possibility of chemical poisoning In the established organization, such a thing is impossible at the Hauptgesundheitsamt in Berlin, which has the largest pathologic laboratory in Germany. The practical collaboration of the departments, with a total absence of friction, brings many advantages to the municipal administration and to the population of Berlin. In 1926, the reorganization of the system of regular examination of school children by school physicians was undertaken, and, in 1927, the system of full-time school physicians was introduced, although, for practical reasons, part-time examiners are still employed to some extent. A city-state, with almost 4,500,000 population, which has all the duties of a province to fulfil, could not dispense much longer with the services of a specialist in the field of medical statistics.

The Hauptgesundheitsamt has performed numerous tasks satisfactorily; for example, the combating of diphtheria, in which reports of the experiences in the United States proved of value. The organization of the hygienic treatment of the milk supply of Greater Berlin constitutes a fine example of combined control by bacteriologists and chemists. The daily supply of milk brought to Berlin from the surrounding area amounts to 800,000 liters. The milk is supplied by districts that, in recent years, have been repeatedly visited by typhoid epidemics, and especially by so-called *molkereityphus*, or dairy typhoid. It is remarkable that in not a single case has the disease been transmitted to Berlin from the area of supply and that the value of the milk, in spite of hard times, has improved. That there is constant danger of transmission of the disease is, of course, fully recognized.

Other undertakings have been successfully carried out. Finally, plans have been laid for a systematic combating and treatment of malignant tumors. In the institutions themselves a system of hospital aid in cases of illness has been introduced. The institutions for chronic cases, and particularly the psychopathic hospitals, have introduced the system of ambulant care for mild mental cases. This plan has reduced the burden on the taxpayers and has likewise lifted, to a great extent, the psychic burden hitherto borne by the friends and relatives of mental patients. The difficulties of the task are, as Professor von Drigalski, the director of the Berlin Hauptgesundheitsamt, stated, almost overwhelming.

TURKEY

(From Our Regular Correspondent)

Ankara, Oct. 30, 1932.

Epidemic of Rabies

With the beginning of the new year, reports have come from almost all parts of Anatolia showing hydrophobia increasing at an alarming rate. The outbreak of the epidemic coincided with the time of mating of cats and dogs. There are few pet dogs in Turkish homes but more pet cats, the Ankara and Persian cats being given special preference. Almost all city homes have at least one cat, and stores, groceries and butcher shops are never without their cat families, for the doorsteps of stores are the favored places where deserted kittens are left. Before the days of the grinding machine, when the old method of chopping meat on a board with a hatchet was still in use, the cats of the neighborhood used to appear at the first sound, to wait in front of the open kitchen window for the cast off pieces of meat. In this epidemic, cat bites and scratches are largely responsible for instituting antirabic treatment, in many cases of whole families, in the cities, while in rural communities, where dogs are more numerous, dog bites are largely responsible.

Although the danger of animal bites seems established in the public mind, people often fail to obey the regulations of municipalities relative to the keeping of dogs and cats. Superstitious notions still prevalent among the older generation of women are chiefly responsible for the protection of dog and cat litters and for the hiding of cats and dogs at the approach of officials charged with their extermination.

Formerly the majority of persons were bitten by stray dogs and cats, but the majority of animal bites this time originated from pet dogs and cats. All provincial and municipal health departments were prevailed on to engage immediately in an active campaign demanding the systematic extermination of all stray dogs and cats. The first antirabic institution was established in Istanbul forty-two years ago; antirabic institutions now exist in Izmir, Konia, Sivas, Diyarbekir and Erzerum. Because of the advantage in using phenol-killed vaccine, it is now produced at the Istanbul institute for distribution to the health departments. At the other antirabic institutes, the methods of Pasteur and Högyes are in use. Persons who have been bitten practically never go without treatment; for indigents, transportation and other expenses are paid by the municipalities. The fatality rate among bitten persons was 2 per thousand at the Istanbul institute in the recent epidemic. Before 1910, hydrophobia was not uncommon in Turkey. Gradually throughout the provinces dogs were exterminated, with the result that hydrophobia decreased. Since the World War it has been on the increase again. The number of persons admitted to the Istanbul institute for ambulant or hospital treatment is shown in the table.

Persons Admitted to Instanbul Institute for Treatment

1921	337	1925	1,229	1929	945
1922	899	1926	1,170	1930	979
1923	1,035	1927	1,218	1931	1,210
1924	1,229	1928	1,008	1932 (9 months)	1,555

Reorganization of the Istanbul University

To meet the requirements of present standards, a reorganization of Istanbul University has long been intended. At the invitation of the government, Professor Malch of Geneva University made a survey of the situation last year. Legislation will be enacted by the coming session of parliament whereby the carrying out of his recommendations will be facilitated. As the new situation requires a person in the prime of life, the choice was Dr. Reshid Galip, a former physician who has recently been appointed minister of education. Dr. Reshid Galip has long shown interest in the problems of medical education and education in rural communities. Though the introduction of the use of Roman characters, in place of the Arabic script, greatly facilitates the learning of reading and writing, and about one and a half million adults have procured reading and writing certificates, about 70 per cent of the population is still illiterate.

RIO DE JANEIRO

(From Our Regular Correspondent)

Oct. 15, 1932.

Aural Vertigo

Dr. P. Errecart, from Argentina, recently lectured before the Academia Nacional de Medicina of Rio de Janeiro on aural vertigo (Ménière's disease). The vestibular labyrinth has a great influence on the muscles of the eyeball and a lesser influence on the muscles of the body. There is a perfect balance between the influence of the two labyrinths, which should be of the same bilateral intensity, since when there is a unilateral predominance a breaking of the balance is produced. The unbalance may be caused either by a unilateral exaggeration or diminution (hyperfunction or hypofunction) of the labyrinthine influence. In the latter case the diminished function may have been caused by the destruction of a labyrinth or by some other local condition by which the influence of the normal labyrinth predominates. According to Wittmaack's theories the nervous centers, the vestibular labyrinth and the muscles of the eyeballs and of the body maintain an equilibrium, the disturbances of which give rise to aural vertigo, as an objective psychosensorial manifestation. The speaker dealt also with the ocular movements during and after rotation of the eyes, as well as on pathologic and nonpathologic nystagmus. Nonpathologic nystagmus may be either of a voluntary or of a physiologic type. The most important types of pathologic nystagmus, related to aural vertigo, are nystagmus originating in diseases of the nervous system, in which the ocular movements are progressive and slow, and the pure vestibular (central) nystagmus, in which the ocular movements are rapid and nonprogressive. Peripheral nystagmus is a rhythmic involuntary and automatic reflex, consisting of a slow and a rapid ocular movement. The pathologic conditions caused by vertigo and by the disturbances of the equilibrium are numerous and quite different from each other. The reports of the otologists on patients with vertigo, after a careful examination of the auditory apparatus, give sufficient grounds to make a diagnosis of aural vertigo on the patient's condition. However, a differentiation between aural vertigo (Ménière's disease) and Ménière's syndrome seems to be manifested, since the most important phenomena in aural vertigo are those related to the apoplectiform attack, while in Ménière's syndrome the most important phenomena are those related to the condition of the labyrinth. The present confusion originates in the fact that in aural vertigo there are associated phenomena of a diminished labyrinthine innervation and of irritation pertaining to the nervous system. A thorough knowledge on the functions of the sympathetic nervous system will probably give a clearer understanding on this type of labyrinthine neurosis. Labyrinthine apoplexy constitutes a clinical unity, although it presents a multiform anatomicopathologic picture. In its development, certain pathologic disturbances of the vessels are involved. The otologic diagnosis of labyrinthine angiopathy should be based on the functional examination of the ear, but it should be complemented by the clinical diagnosis.

Epidemic of Beriberi

In the island of Fernando de Noronha in the state of Pernambuco, a great epidemic of beriberi recently developed. The press called for help from the local authorities. The government of the state sent a committee of physicians to study the causes and to control the epidemic. Drs. D. Parreiras, E. Altino, M. Ramos, Barreto Goncalves, R. Rego Barros, J. Lucena and L. de Oliveira, of Recife, were appointed members

of the committee. The commissioners studied the climate and the hygienic conditions of housing, prisons, food and water supply, as well as the epidemiologic, bacteriologic and clinical aspects and pathogenesis of the disease. From partial reports given by the commissioners it may be concluded that the humidity and warm climate make the living conditions of the island unhealthful. The water is unsuitable for drinking, washing and cooking. Both in the construction and in the general care of housing, the laws of hygiene have been neglected and the houses are insanitary. Prisons are deprived of fresh air and of light, are lacking in hygienic installations and proper disposal of offal, and the cells are damp and filthy. The food for the garrison is more or less varied but the prisoners are fed only with beans, food prepared with flour and salted and dried beef. The cases of beriberi observed apparently were not caused by Bacillus coli-communis nor were they due to alimentary deficiency, since most of the cases observed were in persons who had the best kind of food.

Specificity of Intradermal Tuberculin Reactions

Dr. Alvimar de Carvalho recently lectured before the Liga Brazileira contra a Tuberculose of Rio de Janeiro. His lecture may be summarized as follows: From a comparison made between intradermal tests, in the performance of which either physiologic solution of sodium chloride or a glycerol broth (previously concentrated in a water bath to one tenth its original volume) was used, and Koch's old tuberculin test, performed in children who had received the B C G vaccine orally after birth and had lived in nontuberculous surroundings, it was found that nontuberculous elements have an influence on the results of the Mantoux test. Nontuberculous macules and papules of 2 to 12 and 2 to 8 mm. in diameter, respectively, frequently appeared after the last injection of either physiologic solution of sodium chloride or of glycerol broth, the final dose of which was 0.1 cc. The macules and papules represented a secondary reaction of sensitization of the skin to the mechanical agent in the injection. The true tuberculin allergy is manifested by the appearance of papules of about 10 mm. in diameter in the cutaneous areas involved in the tuberculous lesions. The appearance of papules of from 5 to 10 mm. in diameter in same areas was considered as indicative of a doubtful reaction. It is worth mentioning that the appearance of larger nontuberculous cutaneous lesions (redness of the skin and similar skin reactions) was most frequently observed in patients with certain conditions such as Czerny's exudative diathesis, even in the cases in which the solution used was physiologic solution of sodium chloride.

Physiology of the Spleen

Dr. Bancroft recently lectured before the Academia Nacional de Medicina of Rio de Janeiro on the movements of the spleen and the conditions under which they are produced. In order to observe the changes in the volume of the spleen during contraction and dilatation of the organ, the author performed experiments on dogs, placing the spleen outside the body. The spleen, after having been exteriorized, was covered with wax paper saturated with petrolatum. Before the operation was performed, the volume of the spleen was estimated by injection of a known amount of blood into the splenic artery, after the splenic vein had been ligated, and by observation of the changes produced in the outer surface of the spleen. The speaker showed in a film the changes in the volume of the spleen under contraction or dilatation of the organ. The spleen is greatly contracted when the animal runs or swims, as well as when the animal is under the effects of chloroform anesthesia or of psychologic stimulation, such as when a cat is placed in front of the dog. The contraction of the spleen during pregnancy reaches its maximal point four days before parturition. In female dogs the spleen is greatly contracted during exercise, during pregnancy and during lactation.

Marriages

WILLIAM EVANS HUDSON, Mount Vernon, Ohio, to Miss Mildred Kathryn Hahn of Columbus, October 29.

WILLIAM J. BLACKARD, JR., to Miss Irene Travis, both of Harrisburg, Ill., in Louisville, Ky., November 19.

VANSEL STANLEY JOHNSON to Miss Margaret Woodhull Davison, both of New York, November 15.

HUGH MENAGLE BABBITT, JR., to Miss Emily Alice Crist, both of Plainfield, N. J., October 15.

DANIEL JAY JOHNS, JR., to Miss Elizabeth Holt, both of Nashville, Tenn., November 14.

ALBERTO J. DEL GRATTA to Miss Leonora Lucia Caggiano, both of Malden, Mass., recently.

KERWIN W. KINARD, Kansas City, Mo., to ~~Miss~~ Gail Stephens of Detroit, recently.

HENRY I. CHAPMAN to Miss Sylvia Eppenstein, both of Chicago, November 10.

JOHN J. GALLIVAN to Miss Dorothy W. Dee, both of Braintree, Mass., October 1.

Deaths

William Amie Clark ⊕ Oakland, Calif.; Cooper Medical College, San Francisco, 1892; fellow of the American College of Surgeons; chief of the staff, gynecological service, Samuel Merritt Hospital; formerly superintendent and resident physician to the Alameda County Infirmary, San Leandro; aged 61; died, October 28, at the Mayo Clinic, Rochester, Minn., of carcinoma of the stomach.

Saul Seides ⊕ Brooklyn; University and Bellevue Hospital Medical College, 1912; fellow of the American College of Surgeons; attending obstetrician and gynecologist to the United Israel-Zion Hospital and chief of the gynecological clinic, outpatient department; associate obstetrician to the Jewish Maternity Hospital, New York; aged 45; died, October 30, of acute pancreatitis.

William H. Schutz ⊕ Kansas City, Mo.; St. Louis College of Physicians and Surgeons, 1893; member of the American Academy of Ophthalmology and Oto-Laryngology and fellow of the American College of Surgeons; on the staffs of the Research and St. Luke's hospitals; aged 61; was drowned, October 29, when his speedboat capsized.

Rudolph Horsky ⊕ Helena, Mont.; University of Pennsylvania School of Medicine, Philadelphia, 1895; past president of the Medical Association of Montana; fellow of the American College of Surgeons; served during the World War; attending surgeon to St. John's and St. Peter's hospitals; aged 61; was found dead, October 23.

Stanley Marshall Rinehart ⊕ Washington, D. C.; Hahnemann Medical College and Hospital of Philadelphia, 1891; member of the Medical Society of the State of Pennsylvania; served in the United States Army during the World War; aged 65; died, October 28, of uremia and chronic nephritis.

Willis Greene Jones ⊕ Sedalia, Mo.; Beaumont Hospital Medical College, St. Louis, 1897; secretary of the Pettis County Medical Society; served during the World War; formerly county coroner; aged 59; died, November 4, in the Bothwell Hospital, of cerebral hemorrhage.

Thomas Clay Sanders ⊕ Shawnee, Okla.; Louisville (Ky.) Medical College, 1903; past president and secretary of the Pottawatomie County Medical Society; city superintendent of public health; on the staff of the Shawnee Municipal Hospital; aged 55; died, October 16, of heart disease.

Richard Mobley Little, Martin, Tenn.; University of the South Medical Department, Sewanee, 1899; member of the Tennessee State Medical Association; aged 54; died, November 4, in the Barnes Hospital, St. Louis, of septicemia, as the result of an operation on his hand.

Charles Otto Molz ⊕ Quincy, Ill.; Missouri Medical College, St. Louis, 1898; fellow of the American College of Surgeons; aged 60; on the staff of St. Mary's Hospital, where he died, November 3, of agranulocytic angina, edema of the glottis and dilatation of the heart.

Walter Ralston Rodgers, Philadelphia; Jefferson Medical College of Philadelphia, 1883; aged 70; on the staffs of the Northwestern General Hospital, where he died, October 28, following fracture of the limb and pelvis in a roadway accident, the cause of which was unknown.

Grandison A. Goben, Kirksville, Mo.; Kentucky School of Medicine, Louisville, 1870; Bellevue Hospital Medical College, New York, 1884; formerly mayor and member of the state board of health; aged 88; died, November 7, of chronic myocarditis and arteriosclerosis.

Frank Garrett Jones, Jr., Cleveland; Ohio State University College of Homeopathic Medicine, Columbus, 1915; served during the World War; on the staff of the Glenville Hospital; aged 41; died, November 3, of hypertension, nephrosclerosis and bronchopneumonia.

William Todd Largent, McKinney, Texas; Vanderbilt University School of Medicine, Nashville, 1899; city health officer; formerly county health officer; on the staff of the McKinney City Hospital; aged 57; died, October 23, of heart disease.

Asbury Hull, Augusta, Ga.; University of Georgia Medical Department, Augusta, 1907; clinical professor of surgery at his alma mater; aged 49; died, November 4, of burns received when the automobile in which he was driving caught fire.

Samuel Frederick Swantees, St. Louis; Hahnemann Medical College and Hospital, Chicago, 1896; aged 66; died, August 28, in the City Hospital, Springfield, Ohio, of cerebral hemorrhage, as the result of an automobile accident.

Karl David Sanders, Jonesboro, Ill.; Ensworth Medical College, St. Joseph, 1908; veteran of the Spanish-American War; aged 52; died, November 4, in the Veterans' Administration Hospital, North Chicago, of arteriosclerosis.

John Tennyson Haynes ⊕ State Soldiers Home, Ohio; Miami Medical College, Cincinnati, 1889; aged 68; surgeon to the Ohio Soldiers' and Sailors' Home Hospital, where he died, November 3, of cerebral hemorrhage.

Frederick Lincoln Chenery, Monmouth, Maine; University of the City of New York Medical Department, 1886; member of the Maine Medical Association; aged 69; died, September 30, of coronary occlusion.

Howard Carter, St. Louis; Beaumont Hospital Medical College, St. Louis, 1893; member of the Missouri State Medical Association; aged 74; died, November 4, of carcinoma of the retroperitoneal lymph glands.

George Philip Carr ⊕ Lieut. Commander, U. S. Navy, Washington, D. C.; University of Vermont College of Medicine, Burlington, 1915; entered the navy in 1917; aged 43; died, October 30, of angina pectoris.

James Renwick Matheson, Breadalbane, P. E. I., Canada; McGill University Faculty of Medicine, Montreal, Que., 1893; served during the World War; aged 64; died, August 6, in Springfield, of acute nephritis.

Edgar Morris Sneed, Stafford, Va.; Medical College of Virginia, Richmond, 1889; member of the Medical Society of Virginia; aged 76; was found dead, September 13, in a swampland ravine near Toano, Va.

Henry Albert Staib, Chicago; University of Illinois College of Medicine, Chicago, 1915; member of the Illinois State Medical Society; aged 40; was instantly killed, November 9, in an automobile accident.

Willard G. Reynolds ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1894; on the staffs of St. Mary's Hospital and the Brooklyn Eye and Ear Hospital; aged 66; died, October 27, of heart disease.

Dell Lee Connell ⊕ Picher, Okla.; St. Louis College of Physicians and Surgeons, 1910; formerly mayor of Picher; proprietor of the Picher Hospital; aged 61; died, November 4, of bronchopneumonia.

Cora Billings Lattin, Albion, N. Y.; University of Buffalo School of Medicine, 1894; aged 63; died, November 1, in the Strong Memorial Hospital, Rochester, of cerebral hemorrhage and arteriosclerosis.

Oscar Cohn, Brooklyn; Long Island College Hospital, Brooklyn, 1909; formerly on the staffs of the Long Island College and Jewish hospitals; aged 50; died, November 13, of chronic empyema.

Moses Thomas Sinclair, Institute, W. Va.; Howard University School of Medicine, Washington, D. C., 1898; aged 56; died, in October, at a hospital in Charleston, of cerebral hemorrhage.

Harry Isaac Andrews ⊕ Rochester, N. Y.; Cornell University Medical College, New York, 1905; on the staff of the Park Avenue Hospital; aged 55; died, November 12, of heart disease.

J. Etienne Perrault, St. Anselme, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1911; aged 44; died, May 25.

William Joseph Harrell, Norfolk, Va.; College of Physicians and Surgeons, Baltimore, 1884; member of the Medical Society of Virginia; aged 75; died, October 31, in Aulander, N. C.

Joseph Lee Kerrell, Alton, Ill.; American Medical College, St. Louis, 1889; aged 76; died, November 2, of heart disease.

Daniel Cook, New York; Medical Department of the University of the City of New York, 1867; aged 85; died, September 10, in Scotch Plains, N. J., of chronic interstitial nephritis.

Montford A. Kendrick, Leamington, Ont., Canada; University of Toronto Faculty of Medicine, 1907; coroner; aged 48; died, August 25, in the Homewood Sanitarium, Guelph.

George W. Blakeley, Washington C. H., Ohio; Columbus Medical College, 1878; member of the Ohio State Medical Association; aged 81; died, November 17, of heart disease.

Frank Miller ⊕ Aberdeen, S. D.; Starling Medical College, Columbus, 1893; on the staff of St. Luke's Hospital; aged 65; died, November 1, of cerebral hemorrhage.

Edmund Wallen Bill, Bronxville, N. Y.; Columbia College, College of Physicians and Surgeons, New York, 1889; died, September 15, in a sanatorium at Mamaroneck.

William Wesley Trout, Spring Lake, N. J.; Jefferson Medical College of Philadelphia, 1886; member of the school board; aged 78; died, October 3, of heart disease.

Willoughby Anson Hemingway, Taiku, Shansi, China; Rush Medical College, Chicago, 1901; since 1903 medical missionary; aged 58; died, November 8, of influenza.

Richard W. Hix, Vernon, Texas; University of Louisville (Ky.) School of Medicine, 1892; formerly health officer; aged 73; died, October 14, of carcinoma of the liver.

James Riley Kalar, Anselmo, Neb.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1903; aged 59; died, September 18, of aortic insufficiency.

James Wilson Losee, Pontiac, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1891; aged 67; died, October 24, of coronary thrombosis.

Harold Winfield Lambert ⊕ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1903; aged 55; died, October 27, of heart disease.

Albert Eugene Harrison ⊕ Herington, Kan.; University Medical College of Kansas City, Mo., 1912; aged 41; died, October 11, of acute myocarditis.

Josiah Jackson Luke, Ellenton, Fla.; University of Louisville (Ky.) School of Medicine, 1912; aged 46; died, October 28, in Palmetto, of asthma.

Robert Francis Ludwig ⊕ Brooklyn; Cornell University Medical College, New York, 1903; aged 55; died, November 6, of chronic myocarditis.

George W. Huffman, Defiance, Ohio; Jefferson Medical College of Philadelphia, 1894; aged 71; died, October 31, of chronic myocarditis.

Richard John Ernst Scott, Brooklyn; Cornell University Medical College, New York, 1899; aged 69; died, October 24, of heart disease.

Henry D. Bingle, Syracuse, N. Y.; Dartmouth Medical School, Hanover, N. H., 1882; aged 75; died, November 13, of arteriosclerosis.

Daniel C. Cavanagh, Montello, Wis.; Rush Medical College, Chicago, 1895; aged 64; died, October 24, of pulmonary tuberculosis.

Stephen Shaw Black, Santa Monica, Calif.; Pulte Medical College, Cincinnati, 1875; aged 88; died, September 3, of chronic myocarditis.

Cass Grove Barns, Madison, Neb.; Eclectic Medical Institute, Cincinnati 1874; aged 83; died, September 11, of coronary sclerosis.

John H. Hosford, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1886; aged 73; died, November 1, of cardiac asthma.

Howard D. Kemp, Rupert, Que., Canada; McGill University Faculty of Medicine, Montreal, 1890; died, June 1.

Rufus L. St. John, Cincinnati, Iowa (licensed, Missouri, 1883); Civil War veteran; aged 93; died, August 1.

Correspondence

ABSORPTION OF LEAD THROUGH SKIN

To the Editor:—One frequently encounters statements to the effect that lead is not absorbed through the skin. In Queries and Minor Notes (THE JOURNAL, June 28, 1930, p. 2086) it was stated, "Lead, however, is not absorbed through the skin, except in the form of substances as tetra-ethyl lead."

It is well known that the skin is the least frequent and least likely route of absorption, but it is not true that lead is never absorbed through the skin, in proof of which I submit the following history of a case of lead poisoning which I had occasion to see:

A school teacher, aged 48, complained of pain, weakness and tingling in his left forearm. He had had no known exposure to lead, but about three months prior to the development of these symptoms he had begun the use of a hair dye. The dye was applied with the left hand and rubbed thoroughly into the scalp about twice a week. In the course of its use a rash developed on the scalp, evidently from the presence of some irritating ingredient, but in spite of the rash the patient continued to apply the dye.

Physical examination was negative except for marked weakness of the extensors of the left wrist and diminished sensation over the left thumb. Examination of the hair dye showed that it contained 6 mg. of lead in 20 cc. The patient was put on lead eliminating treatment and subsequent to this lead appeared in the urine and stippled cells in the blood.

In this case it was obvious that lead could have gained entrance to the body only through the skin. The respiratory tract can be ruled out at once and any absorption through the mouth is most unlikely, since the hands were thoroughly washed after each application of the dye. The occurrence of minute abrasions of the skin due to irritation from the dye undoubtedly facilitated absorption, if indeed it was not entirely responsible for it; but at any rate here is evidence that statements as to the nonabsorbability of lead through the skin need to be qualified.

ADELAIDE ROSS SMITH, M.D., New York.

WASSERMANN FAST SYPHILIS

To the Editor:—All students of syphilis are interested in "Wassermann fast," arsenic, mercury and bismuth resistant syphilis and the relation of such "resistance" both to inadequate, insufficient or inefficient treatment and to the drugs used with particular reference to their therapeutic activity. It is a well known but often forgotten fact that not only do bismuth and mercury preparations as obtained on the open market actually vary in their effectiveness irrespective of time intervals between treatments but so do the organic arsenicals — at present considered the most valuable of the antisyphilitic remedies. The following case in point came under my observation in February and could be placed in the same category as case 2 in the query on page 1447 of THE JOURNAL, October 22, and thus be considered by the uninitiated as "Wassermann fast" syphilis when in reality it may have been the poor therapeutic activity of the compounds used.

My patient, a white man, aged 32, was referred by his private physician, Dr. Samuel Chartock, to the clinic of Dr. J. Frank Schamberg, with the history that his physician was unable to obtain negative serologic reactions despite almost fourteen months of treatment with certain brands of neoarsphenamine and bismuth, and that in addition to the persistent positive blood reactions to the Kolmer and Kahn tests, the patient presented, despite regular treatment for the past six months, persistent recurrent syphilitic lesions in the mouth, in the buccal commissures and on the forearms.

A summary of the treatment showed that the patient, who had a chancre, Oct. 28, 1930, began treatment, Dec. 11, 1930, and continued somewhat irregularly until Jan. 27, 1932, during which time twenty-five injections of neoarsphenamine (a total of 10 Gm.) most of it within the past eight months, fifteen injections of a bismuth compound and five of a preparation of mercury were given. Toward the end of this period the treatment was fairly regular and the actual visible lesions were affected but slightly although the patient was receiving combined intravenous injections of neoarsphenamine and intramuscular injections of a bismuth compound. Two treatments by a brand of neoarsphenamine used in our clinic was followed by a rapid disappearance of the cutaneous manifestations.

While greatly interested in the demonstration that all neoarsphenamines may look alike but are really not alike, therapeutically speaking, I was likewise interested in determining certain of the biologic characteristics of the organism with particular reference to its behavior in the rabbit to various organic arsenicals, but unfortunately I failed to obtain a positive rabbit infection, although a large section of affected tissue was macerated and injected into rabbit testicles.

It may, in conclusion, be well to remark that no persistently positive Wassermann and Kahn reaction, if that is the object sought, as it almost always is in acute syphilis, should be considered in such instances as irreducible or "fast" unless the patient has had treatment with the maximum amounts of several different antisyphilitic drugs not only in kind (organic arsenical, bismuth, mercury) and in brand (the experience here reported is an illustration of this requisite) but perhaps in the case of organic arsenicals with different batches of neoarsphenamine of the same brand. A final requisite should be that the treatment be prolonged over a period of at least two years.

SIGMUND GREENBAUM, M.D., Philadelphia.

STATISTICS OF MORBIDITY IN TUBERCULOSIS

To the Editor:—Is it not time that the medical profession made some investigations throughout this country to determine whether the figures so often quoted concerning the incidence of tuberculosis are true? Most of these figures are based on necropsy observations made forty years ago or tuberculin testing of twenty to twenty-five years ago. Two generations have grown up since some of the necropsy studies were made, and one since the original cutaneous tuberculin tests were administered. Tuberculosis has been attacked largely through education; large numbers of patients who otherwise would have spread innumerable tubercle bacilli have been isolated. Many other patients who have not been isolated have been taught how to prevent the spread of their tubercle bacilli to others. In addition, advice about pasteurization, as well as tuberculin testing of cattle and slaughter of the positive reactors, has tremendously reduced the opportunities of bovine bacilli from reaching human bodies. What is the status of the new generations, which have reached their majority during these changing and changed conditions, with regard to tuberculosis? Are pathologists finding, at postmortem, evidence of tuberculosis in 95 per cent or more of their bodies, as they did among the people of two or three generations ago? Is the tuberculin test positive in as high a percentage as it was then? If so, the expensive isolation of patients in hospitals, the costly education of the public and the millions spent in tuberculin testing and in compensation of the owners for animals slaughtered have been of no avail. The effort, time and money might better have been used in combating some other disease.

Can instances be cited wherein tubercle formation, which results in a positive tuberculin reaction, protects against clinical tuberculosis? If so, should we not be cautious ere we arrive at the time when there will be too few tubercle bacilli left to

go around? Thus, many would be unprotected and in great danger if exposure should come. If such a danger is a reality, would it not be better to stop the slaughter of tuberculous cattle, to stop isolating patients with tuberculosis, and teach them to spread their bacilli about, in order that all persons will have an opportunity to secure that important protective dose of tubercle bacilli? Some observations indicate that an individual may better dispense with the so-called protective dose. However, I am desirous of knowing what others have found who are working under different conditions.

Where it is found that a considerable percentage of young adults have escaped infection with tubercle bacilli, are clinicians and pathologists finding that when some of them come in contact with tuberculous patients they quickly develop a rapidly progressive type of tuberculosis, which usually causes death? If so, physicians have done great harm by trying to prevent the spread of tubercle bacilli, and the future of tuberculosis control is dark. However, such evidence as I have does not uphold this theory.

When investigations from various parts of the country warrant answers, it may be found that for a quarter of a century we have been shooting at the wrong target. Having enlisted the public's sympathy and financial assistance in carrying on the present program, we owe them an appraisal of our efforts, if not ourselves. Until this is done, no alternative remains but for each of us to continue our efforts in the light with which we individually see the situation.

J. A. MYERS, M.D., Minneapolis.

THE FIRST OFFICIAL MEDICAL EXAMINATIONS HELD IN AMERICA

To the Editor:—In looking up some Revolutionary data with reference to Dr. Benjamin Church, first surgeon general of the American army, I came on the following references to the first public or official examinations held in America of candidates for the practice of medicine. At the beginning of the War of the Revolution, few among the practitioners of medicine were graduates of medical schools. The usual preparation for practice was a resident apprenticeship under a practitioner of the art, from two to five years being the standard period. The fortunate student worked under a preceptor who gave him not only practical experience but also access to the standard works on medicine, which were not readily available at that period. From the manuscript diary of John Denison Hartshorn (Boston Medical Library), it is evident that the books sold in the apothecary shop of his preceptor (Dr. Sylvester Gardiner), who supplied the physicians of eastern New England with books as well as drugs, were well thumbed before they came into the hands of the ultimate purchasers.

The result of the preceptorship procedure was that the physicians were a mixed lot. The absence of legal requirements for entrance into the practice of medicine resulted further in the presence among them of many who had had little or no practice, even with preceptors, before they held themselves out as doctors.

After the battle of Lexington it became apparent that in the formation of an army it was necessary to prepare for the care of the sick and the wounded. Provisions for this care had been casual up to this time, and dependent wholly on volunteers. The first formal action with reference to the quality of medical service was taken in the Provincial Congress of Massachusetts on May 8, 1775, at the instance of the Committee of Safety. In the organization of a volunteer army the colonels who had raised the respective regiments were important persons, whose dignity and rights had to be respected. They were therefore given the authority to nominate the regimental surgeons. (The powerful group of regimental and hospital surgeons, it will be remembered, later tried to impeach Dr. Church as surgeon general, and did succeed in ousting Dr. John Morgan, his successor.) As a check, however, a committee of medical men was appointed, all of whom were members of the Provincial Congress, to make sure that the candidates for appointment to the service were competent.

The Vote: "Whereas it appears that great uneasiness may arise in the army by the appointment of surgeons who may not be agreeable to the officers and soldiers in their respective regiments, it is, therefore, voted that it be recommended to Congress to allow the colonel of each regiment to nominate the surgeon of his regiment; said surgeon to nominate his mate, and unless there is some material objection made against them, that they be accordingly appointed. *Ordered* that the president pro tem (Dr. Joseph Warren), Dr. Church, Dr. Taylor, Dr. Holten and Dr. Densmore be appointed a committee to examine such persons who are or may be recommended as surgeons for the army now forming in the Colony." (J. Prov. Cong. Massachusetts, May 8, 1775).

Drs. Warren and Church were closely associated leaders in the profession, were members of the Committee of Correspondence, and were probably responsible for this legislation.

A record of an early examination by this board is found in the Military Journal of James Thacher, M.D., one of the candidates, under date of July 17, 1775:

"On the day appointed the medical candidates, sixteen in number, were summoned before the board for examination. This business occupied about four hours; the subjects were anatomy, physiology, surgery and medicine. It was not long after that I was happily relieved from suspense by receiving the sanction and acceptance of the board, with more acceptable instructions relative to the faithful discharge of duty and the humane treatment of those soldiers who may have the misfortune to require my assistance. Six of our number were privately rejected as being found unqualified. The examination was in a considerable degree close and severe, which occasioned not a little agitation in our ranks. But it was on another occasion, as I am told, that a candidate under examination was agitated into a state of perspiration, and being required to describe the mode of treatment in rheumatism, among other remedies he would promote a sweat, and being asked how he would effect this with his patient, after some hesitation he replied, 'I would have him examined by a medical committee.'"

TIMOTHY LEARY, M.D., Boston.

REHABILITATION OF THE DISABLED

To the Editor:—I have just read with particular interest and appreciation the first article in THE JOURNAL, October 8, contributed by Dr. Grover C. Penberthy on the subject "The Surgeon's Responsibility in the Readjustment of the Injured to Work."

State rehabilitation departments have been anxious to render an educational and a social service in cooperation with the medical profession which would aid in the rehabilitation not only physically but also vocationally of disabled persons.

We are grateful for Dr. Penberthy's splendid article. We shall welcome suggestions from the medical profession by which we can better integrate our work to cooperate with the medical profession and particularly their suggestions which will help us in our vocational counseling, training and placement, so that jobs selected for handicapped persons will be most suitable to their physical condition.

May I express again my personal appreciation for the recognition given to our service as indicated in Dr. Penberthy's article and pledge to you again cooperation from this state. I am sure that rehabilitation departments in all the forty-four cooperating states will likewise extend their fullest efforts to work with the medical profession.

JOHN J. LEE, Lansing, Mich.
State Supervisor of Vocational Rehabilitation.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CEREBROSPINAL SYPHILIS IN A CHILD

To the Editor:—A white girl, aged 9 months, seen, July 2, 1931, because of failure to gain and inability to sit up, had been given breast feeding for six months, followed by proper whole milk formulas, orange juice, viosterol, cereals and vegetables. The bowels moved normally and there was no vomiting. The child was undernourished, weighed 15 pounds 13 ounces (7,172 Gm.), was pale and flabby, and was unable to sit up alone. The spleen was palpable, the liver was not enlarged, and there were prominent frontal and parietal bossae. There was a mild pharyngitis. The temperature was 100.4 by rectum. A diagnosis was made of malnutrition, pharyngitis and suspected congenital syphilis. Blood was taken for a Wassermann test but the tube was broken in transit. The child was not brought back for further study until five months later, at the age of 14 months. At this time the weight was 19 pounds 9 ounces (8,873 Gm.), a gain of 60 ounces (1,701 Gm.) in five months. The muscle tone was much improved and the child stood alone and walked with the support of a KiddyKar. She slept well, bowels were normal, and there were no complaints. The blood Wassermann reaction was four plus, the Kahn reaction four plus. The mother's blood Wassermann reaction was four plus, from premarital acquired infection. The father's Wassermann reaction was negative. Antisyphilitic treatment was started in December, 1931, and in the next six months the child received: sulpharsphenamine, 1 Gm. (ten injections of 0.1 Gm. each); neoarsphenamine, 0.72 Gm. (six injections of 0.12 Gm. each); bismuth salicylate, 3 9/10 grains, or 0.25 Gm. (ten injections of from 3/10 to 4/10 grain, or from 0.018 to 0.026 Gm.); mercuric salicylate, 4 grains, or 0.26 Gm. (ten injections of 4/10 grain, or 0.026 Gm.). The total number of injections was thirty-six; the last injection was given June 16, 1932. During this time the child's health has been good except for minor colds and one attack of acute suppurative otitis media. She is strong and active but is still undernourished (weighing 22 pounds 3 ounces, or 10,064 Gm., at 21 months). The molar teeth are of the mulberry type, poorly calcified and slow to erupt. The tonsils and adenoids have been removed. Physical examination otherwise gives entirely negative results, there being no definite physical stigmas of syphilis. Neurologic examination gives negative results and the mentality seems perfectly normal. The blood Wassermann and Kahn reactions, July 28, 1932, were both four plus. Examination of the spinal fluid revealed globulin, negative; cell count, 1.1 cells per cubic millimeter. The colloidal gold test was 1111000000; Wassermann, 0.2 cc., negative; 0.5 cc., 3 plus; 1 cc., 4 plus. 1. Now, how should the examination of the spinal fluid be interpreted in view of the fact that the child appears normal mentally with negative neurologic observations and physically normal except as stated? 2. Has my treatment been good or inadequate so far? 3. I realize that as this child's treatment was neglected until she was 14 months old, she will probably prove serologically refractive and I plan to treat her for at least three years with brief intermissions between courses and at longer intervals thereafter, somewhat as follows: Sulpharsphenamine and neoarsphenamine in alternating courses of ten injections each of from 0.15 to 0.2 Gm., with ten injections of iodobismitol between courses of sulpharsphenamine and neoarsphenamine. Then a rest of one month followed by a repetition of the three courses, then a rest of two months, then a repetition, then a rest of three months, and so on. Please comment on the adequacy of this program. Is there any indication for the use of tryparsamide in such a case and if so how much and how often? Also how large a dose of iodobismitol may I use? Please omit name.

M.D., Ohio.

ANSWER.—1. Cerebrospinal syphilis is not an uncommon accompaniment of congenital syphilis, especially in those cases in which the treatment was begun late. In the case in question, the child was over 1 year of age when treatment was started. The negative globulin test, the normal cell count, the slightly altered colloidal gold test and the positive Wassermann reaction with 1 cc. of spinal fluid are sufficient to place the case in the group of asymptomatic neurosyphilis. In children of this age, in a large series of cases, only one third of the number presenting pathologic cerebrospinal fluid show clinical evidence of neurosyphilis (Veeder, B. S., and Jeans, P. C.: Hereditary Syphilis, in Abt's Pediatrics **5**:645, 1924).

2. The treatment so far given has been adequate.

3. (*a*) The three year course of treatment, with intermission as planned, should prove sufficient. Dosages should naturally be graduated to the weight of the patient. Gain in weight will necessitate increase in dosages. The alternation of arsphenamine with neoarsphenamine is recommended by some. Use of mercury by injection or inunction is still used in many clinics. Potassium iodide is frequently given at intervals during the mercury injections. There are surprisingly few references as to the use of bismuth compounds in congenital syphilis; their use has been recommended instead of mercury in conjunction with the arsphenamine treatment. Arsphenamine has been given by rectum and neoarsphenamine has been injected intraperitoneally. The latter two procedures have not been widely used.

(*b*) The use of tryparsamide in congenital neurosyphilis has been occasionally advised, though as yet there have been only incidental references to its use in this condition. Its judicious use in adult neurosyphilis has given satisfactory results. It should be used with greatest care, as visual disturbances may occur. Careful ophthalmologic examination before beginning the use of this drug is strongly advised. Any subjective or objective signs or symptoms referable to the optic tract occurring during the use of the drug should be immediately investigated and therapy either cautiously continued or stopped.

(*c*) Iodobismitol has been recently suggested in the treatment of neurosyphilis and a preliminary report appeared in THE JOURNAL, February 13, page 537. As yet no reports of its use in congenital neurosyphilis have become available. The dosage for infants or children probably follows the general rule of reducing the dose in comparison to the adult dose; but as there is no experience of its use in congenital syphilis available, any calculated dose for infants or children should be employed with caution.

(*d*) Besides the methods mentioned an arsenical preparation administered by mouth has been suggested in the treatment of congenital syphilis. This preparation, acetarsone, obtainable under the name of "Stovarsol," has been shown to be efficacious when administered orally. The advantage claimed for this form of treatment is the patient's willingness to return for treatment. A review by Arthur F. Abt and Alfred S. Traisman, "Stovarsol in the Peroral Treatment of Congenital Syphilis," appeared in the *Journal of Pediatrics* (**1**:172 [Aug.] 1932).

(*e*) It should be noted finally that if the signs of neurosyphilis in the spinal fluid do not eventually clear up by the method of treatment employed, it may be necessary to resort to intraspinal treatment. Probably the best method for this procedure consists in the injection of serum arsphenaminized in vivo with the addition of from 1 to 2 mg. of mercuric chloride before inactivation. Such intraspinal treatments may be repeated every five to ten days, and from three to five such injections may constitute a series.

"ALTA-CO" AND FORMULAS FOR RINGWORM OF FEET

To the Editor:—The manager of our country club has turned over to me the enclosed booklet describing Alta-Co, a preparation supposedly of solution of formaldehyde and chlorine used in the prevention and cure of athlete's foot. Do you know anything about it? Is there any approved method of prophylaxis for this disease that could be instituted here? If so, would you be good enough to let me know?

A. E. BRANT, M.D., Youngstown, Ohio.

ANSWER.—Solution of formaldehyde in the strength recommended for foot baths described in the pamphlet of Alta-Co is not fungicidal. It acts as a mild astringent but is of no particular value in foot baths for the prevention of ringworm. The use of solution of chlorinated soda equivalent in hypochlorite strength to 1 per cent sodium hypochlorite in foot baths as recommended by Osborne and Hitchcock (THE JOURNAL, Aug. 15, 1931, p. 453) has been widely accepted as an efficient and inexpensive method of prophylaxis of ringworm of the feet. The average cost per pan, with a change of solution every second day, averages about 17 cents. Persons are required to walk through this solution after removing their clothes and before entering the shower baths and also just before putting on their clothes. The same type rubber pans as described in the pamphlet are recommended by Osborne and Hitchcock.

Another method of treatment that has found favor is the use of a powder composed of 1 part of sodium thiosulphate and 4 parts of boric acid, or a 15 per cent solution of sodium thiosulphate for foot baths (Gould, W. L.: Ringworm of Feet, THE JOURNAL, April 18, 1931, p. 1300).

FINIKOFF METHOD IN TUBERCULOSIS OF BONE

To the Editor:—Recently one of your letters mentioned the Finikoff method of treating tuberculosis of the bone. May I get you to let me have more details of this treatment?

H. B. TAYLOR, M.D., Anking, China.

ANSWER.—This treatment is presumed to stimulate the defense mechanism of the body against the tubercle bacillus. It is said to accomplish its effect in three ways: by increasing the monocytes, by stimulating polymorphonuclear leukocytes, and by recalcifying the bones. Finikoff believes that the three elements in the treatment, namely, the peanut oil, the tincture of iodine and the calcium chloride, have a definite effect on the tubercle bacillus. The oil is supposed to destroy the fatty envelop of the bacillus; the iodine breaks up the proteins of the bacilli

and facilitates the absorption of the oil; the calcium salts neutralize the fatty acids produced by the disintegration of the waxy envelop of the bacilli.

The technic of the treatment consists of a series of intramuscular injections of sterilized peanut oil with the addition of tincture of iodine, and vigorous remineralization by calcium salts given in large doses by mouth or intravenously. The injection is made every five to eight days into the upper external quadrant of the buttocks. The initial dose of iodized oil for the adult is from 5 to 10 cc.; for children over a year old it is from 1 to 5 cc. and for younger children 0.5 cc.

Finikoff usually gives three intravenous injections of 10 per cent calcium chloride each week. The beginning dose is 3 cc., the second dose 6 cc. and the third and succeeding doses 10 cc. The usual dose of calcium by mouth is from 4 to 6 Gm. of calcium chloride daily. The average duration of treatment as given by Finikoff is nine months in cases of tuberculosis of the spine, ten months when the knee is affected and six months in hydrarthrosis of the knee. In an article in the *Revue générale de clinique et de thérapeutique* (**41**:789 [Nov. 26] 1927) Finikoff reported seventeen cases of overrated failures which were cured by his treatment. Among the sixty cases in which the treatment had been completed up to that date, there had been no accidents or deaths; forty-six of the patients were reported as cured, ten had improved and there were four failures.

HYPERTENSION WITH INTERSTITIAL NEPHRITIS

To the Editor:—A man has a blood pressure of 235 systolic, 130 diastolic; he is arteriosclerotic and has chronic Bright's disease. He has been on a restricted diet for six or eight years. The teeth were all removed twelve years ago. He has not had company, does not drink coffee or tea, and does not eat red meats. He has been kept quiet now for two months in bed or lying down. He has taken salines enough for two bowel movements daily, together with saturated solution of potassium iodide, 1.4 cc., three times daily, a tablet containing sodium nitrite, five times daily, and a strictly vegetable diet. He has had no salt, pepper or sugar for a long time—five or six years. He has always been a person of good habits. Can you give me any advice? He feels fine and wants to ride around in a motor car. I said No!

M.D., Missouri.

ANSWER.—There are several points of interest missing in the statement of the question, the presence of which might alter any answer to be given: the age of the patient, the size of the heart, the degree of compensation, whether or not edema appears toward evening, and the urinary examination. Taking it for granted that the patient is well past 40 and that all the other elements in the case approximate the normal as much as can be expected in a patient with chronic hypertension, it can be stated that he is doing well. Bright's disease in itself, in the absence of complications, as dyspnea, edema, large quantities of albumin, casts and red blood corpuscles, is no contraindication to moderate activity. Even in the presence of some of the untoward symptoms in a mild form, there is no reason why the patient may not go for a ride in an automobile or go out for short walks. The diet is apparently correct, although it is immaterial whether red or white meat is allowed. Even spices, as has been pointed out in THE JOURNAL within the last year, do not produce the harm generally accorded them. The exhibition of iodides and nitrites may be of value.

AUTOHEMOTHERAPY

To the Editor:—Some months ago the treatment of chronic gonorrheal urethritis was discussed in Queries and Minor Notes. In the reply you mentioned the intracutaneous injection of a few cubic centimeters of the patient's own blood. May I get you to let me know in detail how this treatment is managed? I would understand the injection of a fraction of a cubic centimeter "intracutaneously" but the use of a few cubic centimeters seems to me to imply more than one injection.

H. B. TAYLOR, M.D., Anking, China.

ANSWER.—The administration of autohemotherapy may be accomplished in two ways. Either the patient's own blood, after having been withdrawn from a superficial vein, is injected into the gluteus muscles, or the blood is injected into the cutis of one of the extremities. In the first method, larger quantities of blood (from 5 to 10 cc.) are aspirated into the syringe and then injected. Such injections may be repeated ad libitum.

The intracutaneous injections permit only of small quantities of blood, 0.5 cc. representing about the limit. If forced immunization is required, several points of percutaneous injections are selected at a distance from one another, thus producing several cutaneous welts. Such injections should not be repeated until complete absorption has been accomplished. It is almost superfluous to mention that all these injections should be administered under the strictest aseptic and antiseptic precautions.

PEPTONE IN ALLERGY

To the Editor:—I have a patient who has suffered severely for some years, off and on, with hives. She has been treated during this time without success. I tried calcium without success. She recently had a urethral caruncle fulgurated. A short time ago I prescribed peptone, 0.5 Gm. in capsules, as suggested in Nelson's System of Medicine, to be taken half an hour before meals. Two or three days after starting this treatment she had an attack of nausea and vomiting, lasting eighteen hours. When she recovered from this, she again took the capsules and was ill again, this time with severe pain, which she localized as being "behind both breast bones." Apparently it was epigastric, and it left her with considerable tenderness there. She has had no more hives since the first attack. I am wondering whether these were reactions due to the peptone and, if so, whether they would occur in a normal person, or whether they occurred because she is allergic. I am inclined to believe that the attacks and the cessation of the hives were both due to the peptone. If so, I am wondering whether it would be safe to resume the peptone in smaller doses, if the hives recur. Please omit name.

M.D., Vermont.

ANSWER.—It seems fairly evident that the reactions noted were due to the giving of peptone. Peptone causes frequent reactions in allergic individuals, probably not in those who are normal. It is thus given by many in order to provoke mild shocklike phenomena; the principle involved is that these mild shocks prevent the major reactions which are associated with urticaria and lead to a state of temporary immunity. Pasteur Vallery-Radot (Les phénomènes de choc dans l'urticaire, Paris, 1930) advocates giving peptone in these cases. He advises from 0.4 to 0.5 Gm. of Witte's peptone from half an hour to an hour and a half before meals, with no food between taking the peptone and the meal. He reports excellent results in such cases. He advocates it especially in patients who are sensitive to many foods or in those whose sensitivity cannot be determined. Any peptone may be helpful except that from gelatin. He cites a case in which peptone was given daily for ten days, when urticaria suddenly occurred. The peptone was stopped and then resumed for three day periods, with relief of the urticaria. The peptone was then stopped, no more urticaria resulted, and the patient was able to eat all kinds of food. This case seems somewhat similar to that of the patient mentioned in this query. Other men, notably Americans, have not had the success with peptone which the French report. If the hives return it would be quite logical, as long as good results followed the first treatment, to repeat the whole procedure; but it would be wise not to reduce the dose of peptone—smaller dosage might not cause the shock, which is deemed essential to success.

FEBRILE REACTION FOLLOWING INJECTION OF SULPHUR

To the Editor:—In the April issue of *Clinical Medicine and Surgery* there is an article advocating the use of intramuscular injections of sulphur in olive oil to induce hyperpyrexia. I gave one injection of 0.5 cc. of 2 per cent sulphur in oil into the side of the thigh of a patient. No fever resulted. There was marked local soreness and stiffness for several days and some soreness for three weeks. What is your estimate of the value of this method of inducing hyperpyrexia? Will it really induce hyperpyrexia, and, if so, why did I not get a reaction in my case? Is such a degree of soreness usual? Could the failure to get a temperature increase and the soreness have been due to the injection being largely subcutaneous? Would a subcutaneous injection be more painful later than an intramuscular injection? Please omit name.

M.D., Oregon.

ANSWER.—Injections of sulphur always produce a certain amount of soreness: the subcutaneous more than the intramuscular. The latter is also more apt to produce fever. The dose was evidently insufficient to give the febrile reaction. The usual dose of 2 per cent solution of sulphur in oil is 2 cc.

HYPOTHYROIDISM AND HYPERTHYROIDISM

To the Editor:—In Queries and Minor Notes, August 20, your answer to the cause of cold, clammy, perspiring hands states that the symptom may be due to hypothyroidism and never to hyperthyroidism. Please give me your authority and references for this statement. It is my experience in treating thyroid conditions that the opposite is the rule. Please omit name.

M.D., Texas.

ANSWER.—The answer to the question as to the causes of cold, clammy, perspiring hands and their relationship to thyroid disease seems to be quite evident when the altered physiology of thyrotoxicosis is considered. This has been clearly expressed by Youmans (Changes in the Skin in Thyrotoxicosis, *Am. J. M. Sc.* **181**:681 [May] 1931), who says: "Essentially the changes in the skin consist in an alteration of texture, an increase in the moisture and temperature, changes in the amount of and quality of the hair, and abnormalities of pigmentation. . . . The temperature of the skin in thyrotoxicosis is dis-

tinctly elevated above the normal in contrast to the subnormal temperature in myxedema. The increase is roughly proportional to the increase in basal metabolic rate and occurs in the absence of fever. It is important to note that this increased temperature occurs under environmental conditions which tend to cause a cool skin in normal individuals. . . . Fundamentally it [increased skin temperature] is an expression of the urgent need of the body to rid itself of excess heat, a situation exactly opposite to that in myxedema, in which the main effort is to conserve heat."

It is true that in myxedema the skin is cold and dry rather than moist, but in milder grades of hypothyroidism various vasomotor neuroses may appear, including moist cold hands. It has been a common observation that similar phenomena occur in cystic and occasionally in adenomatous goiter, but patients of this type are not hyperthyroid and the basal metabolic rates are usually within the normal range or below. Vasomotor neuroses are frequent in thyroid dysfunction, but in hyperthyroidism, including exophthalmic goiter, the warm, moist, perspiring skin is of diagnostic significance. Further references corroborating this statement are as follows:

A Textbook of the Practice of Medicine, edited by F. W. Price, Oxford Medical Publications, O. Layton, p. 462.
Boothby, W. M.: Oxford Medicine **3:** 926.
Means, J. H.: Oxford Monographs on Diagnosis and Treatment **4:** 124.
Rienhoff, W. F., Jr., in Lewis, Dean: Practice of Surgery, Hagerstown, Md., W. F. Prior Company **6:** 104.

TRYPANOSOMA HIPPICUM

To the Editor:—Recently I obtained a strain of Trypanosoma hippicum from the Hooper Foundation for Medical Research. For various reasons I have been unable to obtain data on this strain. I have consulted many publications on trypanosomes and allied organisms but have been unable to find any mention of Trypanosoma hippicum in any of them except "Human Protozoology," by Hegner and Taliaferro, which gave it a slight mention in a chart of pathogenic trypanosomes. I would appreciate any information you can give me or refer me to on the subject. Kindly omit name if published.

M.D., California.

ANSWER.—The information may be obtained from articles by S. T. Darling: Murrina, a Trypanosomal Disease of Equines in Panama, *Proc. Canal Zone M. A.* **3:**47, 1910; *J. Infect. Dis.* **8:**467, 1911. Other articles by the same author appeared in *Parasitology* **4:**83, 1911; *Journal of Experimental Medicine* **15:**365, 1912. The immunology of Trypanosoma hippicum has been described by W. H. Taliaferro: Immunology of Parasitic Infections, New York, Century Company, 1929; also Immunological Bases for Different Types of Infection by the Blood Protozoa in the Newer Knowledge of Bacteriology and Immunology, edited by Edwin O. Jordan and I. S. Falk, University of Chicago Press, 1928.

BASAL METABOLISM AND THYROID THERAPY

To the Editor:—After reading the editorial on basal metabolism and puberty (THE JOURNAL, July 9), I should like to ask whether, following the rise in basal metabolism before puberty, the fall following establishment of puberty has been found to be as much as a minus 30. Further, would a minus 30 in a girl overweight, with menses, be more likely to respond to pituitary or to thyroid therapy?

M. M. VAN SANDT, M.D., Wewoka, Okla.

ANSWER.—In some instances the basal metabolism reading has been as low as minus 30. Thyroid therapy would seem to be more logical on the basis of the facts given.

FRACTURE OF BODY OF VERTEBRA

To the Editor:—THE JOURNAL, October 1, carries an interesting item about fracture of the body of a vertebra. The cause and results of such injuries are of much interest as an economic problem to the patient as well as the employer and the insurance companies. You say that such a fracture is possible but highly improbable. This answer gives incorrect information. Supporting the contradiction of your answer, three recent cases are cited:

May 4, I was riding in the rear seat of an automobile with Dr. W. P. Adamson of Tampa, accompanied by Dr. Mallory of Orlando, driving, and Dr. Bierring of Des Moines en route to my residence on the same street, traveled daily. The car, this date, went over a shallow dip in the street. Dr. Adamson, by indirect violence, received a marked compression fracture with a wedge shaped deformity of the twelfth dorsal vertebra.

September 13, another patient, a woman, aged 54, and on October 2, another woman, aged 58, had approximately the same accident and fracture.

Previous to their accidents, these three patients had enjoyed normal health and, so far as could be ascertained, had no preexisting disease.

The three cases, of course, prove little, but are of interest because of the three occurring in the same manner and in the short period of time.

My personal observation has been over a period of years that such fractures are not highly improbable.

BUNDY ALLEN, M.D., Tampa, Fla.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 10. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Milwaukee, June 12. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Milwaukee, June 12. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

COLORADO: Denver, Jan. 3. Sec., Dr. William Whitridge Williams, 422 State Office Bldg., Denver.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 30. *Regular.* Washington, Jan. 9-10. Sec., Dr. W. C. Fowler, 203 District Bldg., Washington.

LOUISIANA: New Orleans, Dec. 15-17. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Regular.* Minneapolis, Jan. 17-19. Sec., Dr. E. J. Engberg, 524 Lowry Medical Arts Bldg., St. Paul.

NORTH DAKOTA: Grand Forks, Jan. 3-6. Sec., Dr. G. M. Williamson, Grand Forks.

OREGON: Portland, Jan. 3-5. Sec., Dr. C. J. McCusker, 1014 Medical Dental Bldg., Portland.

RHODE ISLAND: Providence, Jan. 5-6. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 17. Dir., Dr. H. R. Kenaston, Bonesteel.

WASHINGTON: *Basic Science.* Seattle, Jan. 12-13. *Regular.* Seattle, Jan. 16-17. Dir., Mr. Charles R. Maybury, Olympia.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 17. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Regular.* Madison, Jan. 10-12. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

Maryland June Report

Dr. Henry M. Fitzhugh, secretary, Board of Medical Examiners of the Medical and Chirurgical Faculty of Maryland, reports the written examination held in Baltimore, June 21-24, 1932. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and thirty-four candidates were examined, 129 of whom passed and 5 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent
College of Medical Evangelists	(1932)	90.7
Georgetown University School of Medicine (1931) 83.2, 83.8, 85.1, 86.6, 87.3, (1932) 76.1, 79.6, 80.5, 82.8, 84, 84.1	(1925)	86.4,
George Washington University School of Medicine (1931) 79.5, 83.2, 84.1, 85.7, 86.7, 87.1, (1932) 86.1, 88.7	(1930)	83.2,
Howard University College of Medicine (1931) 80.1, 80.4, 80.8, 83.4, 85.6, (1932) 79, 82.8, 83.4, 84.1, 86.1	(1930)	75.2,
Emory University School of Medicine	(1930)	83.4
Loyola University School of Medicine	(1932)	81.3
Northwestern University Medical School	(1931)	82.3
Johns Hopkins University School of Medicine (1930) 82.7, (1931) 85.5, 86.2, 88.1, (1932) 76.6, 78.2, 81.5, 81.6, 82.6, 83, 83.4, 83.8, 84.1, 84.2, 84.4, 84.7, 84.8, 85.1, 85.8, 87.7, 88, 88.1, 88.4, 88.5, 88.7, 89.2, 89.7, 90, 91.2, 94.1	(1929)	80.5,
University of Maryland School of Medicine and College of Physicians and Surgeons (1931) 82.4, 84.3, 85.1, 85.7, 85.8, 89, (1932) 81.4, 83.8, 84.2, 84.4, 84.7, 84.8, 85.2, 85.4, 85.6, 85.7, 86, 86, 86.2, 86.3, 86.4, 86.5, 86.5, 86.6, 86.7, 86.7, 86.8, 87, 87.2, 87.2, 87.3, 87.3, 87.3, 88, 88, 88.5, 88.5, 88.5, 88.5, 88.6, 88.7, 89.1, 89.3, 89.6, 90, 90.3, 90.4, 90.6, 90.7, 90.8, 90.8, 91, 91.5, 91.6, 91.8, 92.4, 92.6	(1930)	84,
Jefferson Medical College of Philadelphia	(1932)	87.6
University of Pennsylvania School of Medicine	(1931)	84.6
University of Virginia Department of Medicine	(1931)	83.6
Marquette University School of Medicine	(1930)	80.4

FAILED College	Year Grad.	Per Cent
Howard University College of Medicine (1930) 65.3,	(1931)	73.2
University of Havana Faculty of Med. and Pharmacy	(1927)	74
University of the Dominican Republic Faculty of Medicine and Natural Sciences	(1910)	72.3
University of Rome Faculty of Medicine and Surgery	(1922)	72.3

Dr. Fitzhugh also reports 13 physicians licensed by reciprocity with other states and 1 physician licensed by endorsement from Feb. 1 to July 21, 1932, and 4 physicians licensed by examination at a special meeting held in Baltimore, July 21. The following colleges were represented:

LICENSED BY RECIPROCITY College	Year Grad.	Reciprocity with
College of Medical Evangelists	(1915)	California
Georgetown University School of Medicine	(1910)	Dist. Colum.
George Washington University School of Medicine (1928) North Carolina	(1924)	Dist. Colum.
Howard University College of Medicine	(1925)	Dist. Colum.
Emory University School of Medicine	(1929)	Mississippi

College of Physicians and Surgeons of Baltimore	(1913)	W. Virginia
University of Maryland School of Medicine and College of Physicians and Surgeons	(1929)	New York
Long Island College Hospital	(1921)	Penna.
University of Cincinnati College of Medicine	(1929)	Ohio
Medical College of Virginia	(1926)	Virginia
University of Virginia Department of Medicine	(1926)	Virginia
Dalhousie University Faculty of Medicine	(1925)	Alabama

LICENSED BY ENDORSEMENT

College	Year Grad.	Endorsement of
University of Minnesota Medical School	(1927)	N. B. M. Ex.

LICENSED BY EXAMINATION

College	Year Grad.	Number Licensed
College of Physicians and Surgeons, Arkansas	(1911)	1
Tulane University of Louisiana School of Medicine	(1920)	1
College of Physicians and Surgeons of Baltimore	(1905)	1
University of Vermont College of Medicine	(1904)	1

New Hampshire September Report

Dr. Charles Duncan, secretary, New Hampshire Board of Registration in Medicine, reports the oral, written and practical examination held at Concord, Sept. 9-10, 1932. The examination covered 12 subjects and included 110 questions. An average of 75 per cent was required to pass. Seven candidates were examined, all of whom passed. Ten physicians were licensed by reciprocity with other states and 3 physicians were licensed by endorsement. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
University of Maryland School of Medicine and College of Physicians and Surgeons	(1931)	81
Boston University School of Medicine	(1930) 88, (1932)	81
Laval University Faculty of Medicine	(1932)	75
McGill University Faculty of Medicine	(1932)	85, 88
University of Montreal Faculty of Medicine	(1932)	81.5

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
George Washington University Medical School	(1905)	Dist. Colum.
Indiana University School of Medicine	(1920)	Indiana
College of Physicians and Surgeons of Baltimore	(1903)	Mass.
Harvard University Medical School	(1917)	Mass.
Tufts College Medical School	(1929) (1910), (1931, 2)	Vermont, Massachusetts
Woman's Medical College of Pennsylvania	(1930)	Penna.
University of Pennsylvania School of Medicine	(1915)	Penna.

LICENSED BY ENDORSEMENT

College	Year Grad.	Endorsement of
Columbia Univ. College of Physicians and Surgeons	(1931)	N. B. M. Ex.
Harvard University Medical School	(1931)	N. B. M. Ex.
University of Vermont College of Medicine	(1930)	N. B. M. Ex.

Nevada Reciprocity Report

Dr. Edward E. Hamer, secretary, Nevada State Board of Medical Examiners, reports 3 physicians licensed by reciprocity at a meeting held in Reno, Aug. 1, 1932. The following colleges were represented:

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
George Washington University Medical School	(1923)	Utah
Hospital College of Medicine, Louisville	(1897)	Wisconsin
University of Pennsylvania School of Medicine	(1929)	Penna.

Maryland Homeopathic Examination

Dr. John A. Evans, secretary, Maryland Homeopathic Board of Medical Examiners, reports the written examination held in Baltimore, June 22-23, 1932. Two candidates were examined, both of whom passed. The following college was represented:

PASSED

College	Year Grad.	Number Passed
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1932, 2)	2

Wisconsin Reciprocity Report

Dr. Robert E. Flynn, secretary, Wisconsin State Board of Medical Examiners, reports 20 physicians licensed by reciprocity with other states at a meeting held in Milwaukee, Sept. 13, 1932. The following colleges were represented:

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Emory University School of Medicine	(1925)	Alabama
Loyola University School of Medicine	(1916) (1919), (1932)	Missouri, Illinois
Northwestern University Medical School	(1932)	Illinois
Rush Medical College	(1931)	Illinois
University of Illinois College of Medicine	(1927)	Illinois
Indiana University School of Medicine	(1928)	Indiana
University of Michigan Medical School	(1928)	Michigan
University of Minnesota Medical School	(1928), (1932, 2) (1930)	Minnesota, Michigan
Barnes Medical College, Missouri	(1908)	Missouri
St. Louis College of Physicians and Surgeons	(1890)	Missouri
University of Cincinnati College of Medicine	(1932)	Ohio
University of Tennessee College of Medicine	(1931)	Tennessee
Medical College of Virginia	(1931)	Virginia
Marquette University School of Medicine	(1932)	Illinois
University of Wisconsin Medical School	(1929)	Ohio

Book Notices

A Text-Book of Pathology: An Introduction to Medicine. By William Boyd, M.D., M.R.C.P., F.R.C.P., Professor of Pathology in the University of Manitoba. Cloth. Price, $10. Pp. 946, with 288 illustrations. Philadelphia: Lea & Febiger, 1932.

The author is known from his earlier books (Surgical Pathology, Pathology of Internal Diseases), which have been received with favor. The present book may be regarded as a consolidation with careful revision and expansion of the two earlier books, which to a large extent survey the same general field from different angles and unavoidably duplicate each other on practically all points of fundamental importance. In the preface the author states that the book "is intended for the student of pathology, whether undergraduate or postgraduate," and to serve as an introduction to the study of medicine. To make this introduction real and effective, special emphasis is placed on explaining the relationships between structural lesions and clinical manifestations. This emphasis is a feature of great value to the student. The book is divided into two parts, general and special pathology. The part on general pathology, which occupies approximately one third (333 pages) of the volume, discusses the following topics: inflammation; repair; infection, immunity, hypersensitiveness; degenerative processes and disturbances of metabolism; circulatory disturbances; disorders of growth; injuries caused by physical irritants; injuries caused by chemical poisons; disorders of the regulators of the body (hormones and vitamins); the body constants in disease; diseases caused by animal parasites; tumors, and infectious diseases. The second part deals in systematic fashion with the pathologic conditions of the organs and tissues of the body except the skin, the eye and the ear. The author offers no explanation for this exclusion. The diseases of these organs are part of medicine, and in view of the general competence of the author as a writer of textbooks it seems reasonable to believe that summaries of their nature and relations would have added much to the usefulness of the book for the readers for whom it particularly is intended. The illustrations, all black and white except the borrowed plate showing schizogony of malarial parasites, are adequate and commendable but not distinctive in quality. The references to further reading are almost too exclusively to recent writings; no doubt many teachers will wish that the student's attention were turned directly more often to original, classic contributions. The style is clear, fluent, readable. The presentation is well balanced, comprehensive, reliable, at times perhaps a little hurried, which is not strange in view of the extent of the field covered by the book. Occasionally one becomes aware of an overdogmatic statement, as in the section on hypersensitiveness. When the author writes that the immunity following poliomyelitis "is probably due to a cellular rather than a humoral change, for although the blood of persons who have recovered from poliomyelitis contains immune bodies, these are not proportionate to the degree of active immunity produced," the question arises, How has that proportion been determined? Somehow vaccinia and vaccination against smallpox escape consideration while other forms of preventive inoculation, e. g., against rabies, are discussed. And there seems to be no mention of blood grouping. The author has missed the chance to contrast "lymphogranuloma inguinale," which is not mentioned, with "granuloma inguinale" (p. 323). On the other hand, a new and important chapter has been introduced into general pathology, namely, on the disorders of the regulators of the body, the hormones and vitamins; and the descriptions of infectious diseases are exceptionally inclusive. The book is an important addition to the list of acceptable textbooks on pathology. In manner of presentation and inclusiveness, it sets a high standard. It will serve well its purpose as an introduction to the study of medicine in the large sense.

Funktionelle Pathologie, eine klinische Sammlung von Ergebnissen und Anschauungen einer Arbeitsrichtung. Von Dr. Gustav von Bergmann, ordentl. Professor der Inneren Medizin und Direktor der II. Med. Universitätsklinik Berlin. Unter Mitarbeit von Dr. Martin Goldner, Assistent der Klinik. Paper. Price, 18.60 marks. Pp. 425, with 74 illustrations. Berlin: Julius Springer, 1932.

Not only is every chapter in this work interesting in bringing a clear presentation of new points of view, of new observations and of new therapeutic suggestions, but the development of the whole makes apparent so close an integration of the application of physiology and pathology to clinical problems that the reading of the book affords genuine pleasure. Perhaps the interest is enhanced because of the personal flavor that prevails throughout, for it is biographic in the sense that it portrays the development of von Bergmann's line of reasoning from the time of his earliest investigations, and the delineation of strictly scientific material is done with sufficient personal touch to enhance both its liveliness and its clinical value. The work of von Bergmann and his pupils has covered the entire range of the clinical field. The discussion of the colon, the appendix and the stomach cannot help but interest the gastro-enterologist. The chapters on the pancreas, the liver and the gallbladder are of equal interest to the surgeon. For the internist interested in metabolic problems, the chapters on metabolism and on the thyroid will present much that is stimulating. The cardiologist will find the chapters on blood pressure, disurbances of the circulation, compensation and decompensation of great value. And the neurologist and the psychiatrist will find the fourteenth and sixteenth chapters (visceral nervous system and psychopathic relations) of great value because of their intimate correlation with general medicine. Perhaps the breadth of von Bergmann's point of view is best illustrated in his treatment of inflammation and allergy. It is impossible to review each chapter; unfortunately, too, the book is not available in English so that its real value—the emphasis on the application of physiologic knowledge to the clinical problems of everyday medicine—might reach a larger group. In this country the cloistering of physiology, the rather distinctly nonmedical slant of the physiologist, and its corollary, the lack of influence of physiologic thought on everyday clinical medicine, constitute a serious handicap. It can be remedied only by emphasis such as that which von Bergmann gives, as well as the obvious clinical value which von Bergmann is able to demonstrate. After all, a new line of approach is much more likely to be accepted if a certain degree of usefulness is demonstrable. Physicians are patently too utilitarian and too practical to react otherwise. The younger internist should study this book because it directs to new fields—fruitful in therapeutic possibilities—stimulating in the breadth of understanding. Even the mentally young but older internist will find interpretations which make apparent the *raison d'être* of many puzzling clinical observations.

Children and Their Parents. By Maud E. Watson, Ph.D., Director, Child Guidance Division, Children's Fund of Michigan. With an introductory chapter by Marion E. Kenworthy, M.D. Cloth. Price, $3.50. Pp. 362. New York: F. S. Crofts & Company, 1932.

In the introduction by Dr. Kenworthy it is stated that children "often reflect too readily the burden of the unsolved emotional problems of the adults who surround them whether it be within the parental circle, school, or among those to whom they must look for guidance and direction." The author has prepared a volume showing a method of intensive individual case study. After discussing the "new social philosophy," she explains the method of history taking and interpretation introduced by Dr. Kenworthy. This is based on the recognition of two broad trends in every person's life, the ego and the libido, underlying the behavior. The former covers the instinct of protection, domination, and that which leads every individual to be self maximating or realizing. The latter refers to love value in the broadest sense, love of parents, brothers, sisters, relatives or individuals in the group, or of a mate. Every experience in life has a satisfying or unsatisfying effect and may carry a constructive or destructive trend. Attempt is therefore made to separate the data in the history of a patient into eight lists, four under ego and four under libido. The method is far from exact, but the mere attempt to carry it out is stimulating and illuminating. When done for life histories of father and mother and to some extent of grandparents as well as of the patient, it clarifies much that was obscure. Through this more dynamic material thus gained, cause and effect relationships become clear enough to lend themselves to interpretation. Ten case studies, variously occupying from twenty-five to fifty pages each, make up the body of the book. There are chapters on the technic of treatment and the evaluation of technic which are especially well done. The volume, in spite of its title, is not one for the public but a highly specialized treatise that will be appreciated by students of child guidance and delinquency, by psychiatric social workers and by the more progressive of pediatricians.

Posture: Its Relation to Health. By Frank D. Dickson, M.D., Orthopedic Surgeon, Saint Luke's Hospital and the Kansas City General Hospital, Kansas City, Mo. Everyday Practice Series. Edited by Harlow Brooks, M.D. Leather. Price, $5. Pp. 213, with 118 illustrations. Philadelphia & London: J. B. Lippincott Company, 1931.

The author, who is an authority on orthopedic surgery, has added to the literature his personal experience, with the hope of presenting the subject of posture and its influence on general health in a more connected manner than has been done before. He states properly that correction of postural defects is a distinct aid in the elimination of waste of energy and makes for the most efficient use of the body in every way. It is worthy of study and thought by every practicing physician. The foot exercises are good. It was poor judgment to use black stockings against the black background in figures 82 to 107. Near the bottom of page 173 there is a reference to figure 64, which has no connection with the text. The large number of typographic errors is evidently not the typesetter's fault but the negligence of the author and the proofreader. Such names as Goldthwait and Paget are spelled incorrectly, and Loring Swaim is given as two men, Loring and Swaim, instead of one. Figures 50, 52 and 59 are poor. As reproduced, these have no teaching value. There is no bibliography. The book appears in an attractive binding but it is expensive. In spite of all the adverse criticism the book should be of value to every pediatrician. In the second edition, correction of all typographic and other errors can be easily made.

Researches on Blackwater Fever in Southern Rhodesia. By G. R. Ross, M.B., Ch.B., Ph.D. No. 6 of the Memoir Series of the London School of Hygiene and Tropical Medicine. Paper. Price, 8s. Pp. 262, with 22 illustrations. London: London School of Hygiene and Tropical Medicine, 1932.

This is a continuation of the work done by J. G. Thomson in 1922-1923, the results of which were published as Research Memoir VI of the London School of Tropical Medicine. It is divided into three parts: (1) epidemiology, (2) the blood and urine in blackwater fever, and (3) clinical and therapeutic. The epidemiologic section contains chapters on the topography and development of southern Rhodesia, the distribution of blackwater fever, the seasonal incidence and local distribution of the disease and its correlation with meteorological conditions, the association between malaria and blackwater fever, quinine as an exciting cause, and miscellaneous epidemiologic observations. Among the conclusions brought out in these chapters, the following are of particular interest: The statistics, which apply principally to the European population, indicate that the disease is chiefly associated with rural conditions. Urban centers probably were not always so free of the disease, but their relative immunity has resulted from their general economic and municipal development. There is a definite increase of the disease during certain months, which follows the curve of rainfall after an interval of about three months. In general the data substantiate the conclusion reached by a number of previous observers that blackwater fever is a manifestation of malarial toxicity. Part II consists of two sections, the first on the blood and the second on the urine. In the section on the blood there is an accumulation of extremely valuable laboratory data on such topics as the cellular elements and the plasma, the chemical composition of the blood in malaria and blackwater fever, and icterus. One of the most interesting chapters is devoted to the hypothesis of Blacklock and Macdonald to the effect that the hemoglobinuria of blackwater fever and many other diseases is due to the presence of lactic acid in hemolytic concentration as a result of a preliminary anoxemia. After a careful theoretical and experimental analysis, the author concludes that this attractive explanation fails

for lack of experimental proof. The section on the urine similarly contains a large amount of physical and chemical data. Part III consists of two chapters, the first devoted to a description of the clinical aspects of blackwater fever and the second devoted to the prophylaxis and treatment of the disease. Of particular interest is the conclusion that it is impossible to decide whether or not quinine is justifiable during the blackwater attack. After the cessation of hemoglobinuria, however, the author feels that undoubtedly the malaria should be treated with quinine. A valuable bibliography is given at the end of each part and a useful index for the entire volume is appended. The author is to be congratulated for a really noteworthy contribution to an obscure disease of man.

Diagnostik Innerer Krankheiten in Tabellenform. Von Dr. med. A. J. Cemach. Seventh edition. Paper. Price, 6.30 marks. With 68 tables and 80 illustrations. Munich: J. F. Lehmann, 1932.

Cemach states that it is not the intention of these outlines to take the place of a textbook. He admits that they can be of value only to those thoroughly conversant with the morbid processes of internal diseases. Only typical clinical pictures can be presented. The tables in the final analysis are offered as a quick aid to the perplexed but otherwise well informed physician, as well as for a rapid review of diagnostic points for any purpose. Those who pronounced adversely on the Surgical Diagnosis in Tabulated Form by the same author have no occasion at this moment to change their minds. From a didactic point of view the work under consideration has no value whatever. Memory stunts in medical education have been largely replaced by training of the imagination and of the senses. It is doubtful whether a physician "well trained in fundamentals of pathology" would find much of help or interest in a mere tabulation of symptoms.

Health and Home Nursing. By George Margaretta Douglas, A.M., R.N. Cloth. Price, $2.50. Pp. 383, with 27 illustrations. New York and London: G. P. Putnam's Sons, 1932.

There has been a great increase in the teaching of health and hygiene in schools. Much of the information given has not been of a practical nature. Recently, however, the teaching of home nursing in high schools has been stressed. This is due to the fact that physicians have realized that home nursing courses make a valuable and effective contribution to health education. This book will be helpful in teaching home nursing. The subject is approached in a scientific manner, an historical outline being followed by a discussion of nursing at the present time. The symptoms of illness are discussed in a clear and concise manner. Then follow chapters on the care of the sickroom, the bed, methods for securing comfort and cleanliness, diet, the prevention and cure of communicable diseases, the treatment of emergencies, and a well prepared chapter on occupations for the sick. At the end of each chapter is a list of questions and references which will be found helpful in teaching. This work will surely find a place as a textbook in the teaching of home nursing.

Handbuch der Inneren Sekretion: Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Herausgegeben von Dr. Max Hirsch. Band I, Lieferung 6. Paper. Price, 45 marks. Pp. 867-1177, with illustrations. Leipzig: Curt Kabitzsch, 1932.

The present number of this large and ambitious handbook contains chapters on the normal anatomy and histology of the hypophysis and the pineal body by the late Dr. C. Benda of Berlin, and a chapter on the pathology, anatomy and histology of the hypophysis by Dr. W. Berblinger of Jena. The illustrations are numerous and excellent. The treatment is exhaustive and thoroughly scientific. While volume I deals primarily with the anatomy and histology of the endocrine organs in health and in disease, naturally this can scarcely be treated as exhaustively as in the present handbook without some discussion of the functions, normal and pathologic, of these organs. This applies particularly to Berblinger's excellent chapter on the pathology, anatomy and histology of the hypophysis. In this discussion of normal and pathologic functions Dr. Berblinger maintains the same high standard of critical analysis and avoidance of the vagaries and speculations as he does in the more purely anatomic and histologic presentation of the subject. This work by Benda and Berblinger is a distinct contribution to medical science and biology.

Handbook of the Vaccine Treatment of Chronic Rheumatic Diseases. By H. Warren Crowe, D.M., B.Ch., M.R.C.S., Director of the Charterhouse Rheumatism Clinic. Second edition. Cloth. Price, 80 cents. Pp. 79, New York & London: Oxford University Press, 1932.

In this edition of his handbook on the treatment of rheumatism with stock vaccines, the author has revised the text in many places with a view to clarification. He states that the methods advised are modifications of an already established treatment rather than an entirely new one. He offers the first published reports of the Charterhouse Rheumatism Clinic and of the Brighton Clinic; also the results of a further series of 600 cases now in the process of being analyzed. At the former clinic he has treated more than 1,200 cases. The results continue on the same high level as previously reported. The analyses published in his earlier books show that successful results follow in from 50 to 90 per cent of all cases, depending on the severity of the disease. To date, notes of 526 cases have been received. He believes that good results can be obtained by the general practitioner. In the vast majority of cases, treatment is strictly confined to a weekly vaccine injection without any modification in the patient's mode of life. No routine treatment beyond a weekly dose of stock vaccine is given. No autogenous vaccines are prepared, no bacteriologic investigations are undertaken, nor is any search made for foci of infection. He encourages the general practitioner to use stock vaccine in all his rheumatic cases. Those who do not respond or require further investigation should be sent to the nearest center, which would be either a special clinic or a department of a general hospital. Crowe advises that foci of infection should if possible be dealt with after and not before the treatment of the disease by vaccines. The reason lies in the fact that the removal of a focus may so stir up the condition or debilitate the patient that it renders later treatment difficult and much more prolonged. By waiting, one may save the teeth; for, even though they are infected, it does not follow that the particular organisms lodged at the apexes of the teeth are the actual causative agents of the rheumatic condition. The plan of treatment of leaving infected foci untouched, especially in rheumatoid arthritis, is advocated. An axiom worthy of emphasis is the following: The smaller the dose of vaccine, the better the result, provided an improvement follows—not a reaction, but an improvement. The optimal dose is that dose which is followed by the longest period of improvement—an improvement which is not preceded by a reaction.

Kosmetische Operationen: Ein kurzer Leitfaden für den Praktiker. Von Dr. Ernst Eitner. Paper. Price, 18 marks. Pp. 131, with 129 illustrations. Vienna: Julius Springer, 1932.

This compedium is a brief but concise outline describing the various surgical procedures for cosmetic defects. Exception must be taken to the statement that it was intended to aid the general practitioner. There is no doubt that the technical procedures described could be well performed only by the specialist in this type of surgery, who has received a thorough and adequate training. In no other branch of surgery will there be such frequent disappointments to the occasional operator as within the realm of plastic and reconstructive survery. The monograph is well written and easy to understand. The illustrations are especially easy of comprehension and in most instances they clearly portray the technic described. There is appended at the end of each chapter a well arranged bibliography. The ease of mind with which the writer advises incisions within the mucous membrane for various nasal plastic procedures is somewhat unorthodox, as most operators in this field of surgery are somewhat apprehensive of subsequent infection and increase of deformity by the destruction of the cartilage. It would probably seem better to confine these incisions to the cutaneous areas of the vestibule, which is much more easily rendered surgically clean than the nasal mucous membrane. Cosmetic corrections of various deformities of the lip are beautifully treated in this work. The cosmetic results of operations on the pinna are in many instances too flattering, as evidenced by the illustration. The operative procedure designed to correct wrinkles and sagging of the skin about the face and neck are well illustrated. Operative intervention for facial deformity following facial paralysis is inadequately described. There is also a complete absence of reference to plastic operations on the larynx and the esophagus, and no

attempt is made to describe correction of retro-auricular fistulas or depressions following mastoid surgery. Plastic procedures on the skull to repair defects following decompression operations or a loss of bone due to osteomyelitis also have not been described. Undoubtedly these omissions were intentional on the part of the author rather than oversights. That portion of the text devoted to operations that tend to correct pendulous breasts and abdomens or osteoplastic procedures for the correction of knock-knees and bowlegs is especially well written.

Pharmacology of the Medicinal Agents in Common Use. A Brief Account of Their Derivation, Their More Important Uses, Their Chief Physiological Effects, with Incidental Mention of Their Therapeutic Uses. By Stanley Coulter, Ph.D., Sc.D. Prepared especially for students of medicine. Fabrikoid. Price, 50 cents. Pp. 254. Indianapolis: Eli Lilly & Company, 1932.

This booklet is a ready reference to the thousands of products now available in the Pharmacopeia, the National Formulary, New and Nonofficial Remedies and other lists of medicinal agents. So rapidly does the field develop that one looks in vain for some products already advertised and in common use. In general, proprietary preparations are omitted although reference is made to some because of their wide use or some other special interest. For the material that it contains the book is exceedingly useful as a ready reference.

Medicolegal

Evidence: Testimony Based on Roentgenograms Not in Evidence.—In a suit for damages for personal injuries, the plaintiff's attending physician was allowed, over the defendant's objection, to testify that roentgenograms made at the physician's request showed a fracture of the coccyx. The roentgenograms were not then in evidence, and later, when they were offered in evidence, they were rejected by the court. On appeal to the Supreme Court of Ohio, the defendant contended that it was error to permit the attending physician to testify as to what the roentgenograms showed, because they were not in evidence; to do so deprived the defendant of its right to cross-examine the person who made the roentgenograms as to whether they were roentgenograms of the patient and showed the alleged fracture. If the testimony objected to, said the Supreme Court, had been given by an expert witness, not the attending physician, its admission would have constituted reversible error. It was given, however, by the physician who actually attended, treated and operated on the plaintiff for the injury alleged to have resulted from the accident. While there is some conflict in the cases, it is the general rule that an attending physician may testify concerning matters which under other circumstances would be excluded. The authorities do not permit an attending physician to repeat his patient's narrative statements concerning the cause of an accident. They do permit him, however, to repeat statements as to the nature and extent of the injury, if he himself, in the course of his treatment, has acted on those statements. When a physician, acting on his own diagnosis, has required roentgenograms to be made and has acted on those roentgenograms in his treatment of his patient, what possible distinction can be drawn between his testifying what those roentgenograms show and his testifying what a history of the case shows? In any event, under the circumstance of this case, said the court, no prejudicial error was made in permitting the attending physician so to testify, since the diagnosis of a fracture of the coccyx was previously made by this same physician and later the coccyx was removed by him. A judgment in favor of the plaintiff was affirmed.—*Cleveland Ry. Co. v. Merk (Ohio), 180 N. E. 51.*

Accident Insurance: Displacement of Retina from Strain.—The plaintiff claimed that while assisting a carpenter to tilt a flight of steps, weighing about 400 pounds, he strained himself and that the next day the sight of his left eye was blurred. There had been a detachment of the retina and this resulted in the loss of the sight in the affected eye and the removal of the eyeball. The plaintiff sued the defendant insurance company on a policy covering personal injuries resulting from "accidental means." Medical testimony indicated that a physical strain such as the plaintiff had undergone might cause the eyeball to contract in such a way that the fluid in it would be forced under the retina and that there would be no sight in the area of the detached retina. Judgment was given for the plaintiff, and the defendant insurance company appealed to the Supreme Court of Nebraska. The company contended that the injury did not result from "accidental means," within the meaning of the policy, since it followed an act intentionally done by the plaintiff. The term "accidental means," said the Supreme Court, as used in insurance policies, must be interpreted according to the usage of the ordinary man. Such a man would say that the consequences of the act done by the plaintiff was something unforeseen, unexpected, extraordinary and an unlooked for mishap, and so an accident. It matters not that a scientist or one with a specialized knowledge would not denominate as an accident the consequences of the plaintiff's act. The plaintiff's right to indemnity is not lost because his injury resulted from a strain from an act he intended to do, unless the strain was conscious and intentional. It cannot be said as a matter of law that the plaintiff intended to strain himself, or even that, being aware of the possible result of his act, he acted with a reckless disregard of the consequences likely to ensue. Recoveries under policies of the type in question are not limited to cases in which the insured is guilty of no negligence in not foreseeing the consequences of his act. Accident insurance is not designed to furnish indemnity only in cases in which the insured orders his conduct with grave circumspection and a provident foresight of consequences. The judgment in favor of the plaintiff was affirmed.—*Bennett v. Travelers' Protective Ass'n of America (Neb.), 241 N. W. 781.*

"Permanent Injuries" for Which Damages May Be Recovered.—It appeared from the evidence that as the result of an automobile accident the plaintiff's pelvis was injured and that the injury was "what may be termed physically permanent." There was, however, nothing showing more than a possibility or probability that any impairment of her power to earn money would be permanent. Permanent injuries for which a recovery may be had in actions of this character, said the Court of Appeals of Kentucky, are those that are reasonably certain to be followed by permanent impairment of ability to earn money, or produce permanent and irremediable pain, and to authorize the recovery of damages for such injuries there must be positive and satisfactory evidence of impairment of that character. In *Kentucky T. & T. Co.* v. *Downing,* 152 Ky. 25, 153 S. W. 32, there was a considerable enlargement where the plaintiff's arm had been broken, which physicians testified would be permanent, but there was no evidence that that enlargement would materially interfere with the plaintiff's power to earn money or that it would produce permanent pain. In that case the Kentucky Court of Appeals held that an instruction for recovery of damages based on permanent impairment should not have been given. The Court held to the like effect in *Carter Coal Company* v. *Dozier,* 170 Ky. 374, 186 S. W. 140, in which the plaintiff's skull was fractured and several pieces of it were removed, leaving him permanently deformed physically, but in which there was no satisfactory evidence of permanent impairment to earn money or of permanent pain. The doctrine of these cases is controlling in the present instance, said the Court of Appeals, and the trial court erred in submitting to the jury an instruction authorizing it to return damages for permanent impairment of the plaintiff's power to earn money.—*Herndon v. Waldon (Ky.), 47 S. W. (2d) 1047.*

Society Proceedings

COMING MEETINGS

Clinical Orthopedic Society, Chicago, January 12-14. Dr. E. B. Mumford, Chamber of Commerce Building, Indianapolis, Secretary.

Society of American Bacteriologists, Ann Arbor, Mich., December 28-30. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Surgical Association, Miami, Fla., December 13-15. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

184: 297-444 (Sept.) 1932

*Studies of Diseases of Lymphoid and Myeloid Tissues: VII. Nucleotide Therapy of Agranulocytic Angina, Malignant Neutropenia and Allied Conditions: Analysis of Sixty-Nine Cases. H. Jackson, Jr., F. Parker, Jr., and F. H. L. Taylor, Boston.—p. 297.

Response of Reticulocytes to Potent Diets in Severe Experimental Anemia Due to Hemorrhage. Janet Rioch and F. S. Robscheit-Robbins, Rochester, N. Y.—p. 304.

Treatment of Secondary Anemia with "Secondary Anemia Liver Extract" and Iron. G. Cheney and F. Niemand, San Francisco.—p. 314.

*Study on Results of Fifteen Hundred Blood Transfusions in One Thousand Cases. S. H. Polayes and M. Morrison, Brooklyn.—p. 326.

Differential Arterial Tension. E. J. Stieglitz and D. W. Propst, Chicago.—p. 336.

Some Racial Differences in Blood Pressures and Morbidity in Group of White and Colored Workmen. J. M. Adams, New Orleans.—p. 342.

Studies in Atherosclerosis: I. Conditions in Childhood Which Predispose to Early Development of Arteriosclerosis. Pearl Zeek, Cincinnati.—p. 350.

Id.: II. Atheroma and Its Sequelae in Rheumatic Heart Disease. Pearl Zeek, Cincinnati.—p. 356.

Prognostic Value of Repeated Blood Cultures in Pneumococcus Lobar Pneumonia. K. R. Koch, Pittsburgh.—p. 364.

*Internal Drainage: Factor in Production of Postoperative Massive Collapse of Lung (Pulmonary Atelectasis): Suggestions as to Prevention and Treatment. W. B. Faulkner, Jr., and E. C. Faulkner, San Francisco.—p. 370.

Analysis of Three Hundred and Twelve Cases of Diabetes Treated in Open Hospital in Eight Years. R. N. Klemmer, Lancaster, Pa.—p. 379.

Acute Hemorrhagic Necrosis of Pancreas: Clinicopathologic Study with a New Classification Based on Etiology. W. Brody and R. P. Custer, Philadelphia.—p. 389.

Absence of Osteoporosis Demonstrated Chemically in Clinical Hyperthyroidism. A. E. Osterberg and R. G. Mills, Rochester, Minn.—p. 399.

Two Methods of Investigating Diseases of Corpus Striatum. C. J. Munch-Petersen and T. B. Wernøe, Copenhagen, Denmark.—p. 407.

Combined Needle and Cannula for Administration of Transfusion, and Intravenous and Subcutaneous Infusions. A. S. W. Touroff, New York.—p. 413.

Diseases of Lymphoid and Myeloid Tissues.—Jackson and his associates differentiate two types of agranulocytic angina or of malignant neutropenia: the primary idiopathic type, in which the blood changes precede and condition the anginal symptoms, and a secondary type, in which some obvious infection brings about a gradual or rapid fall in the white blood cell count. They have treated sixty-nine patients with malignant neutropenia with pentose Nucleotide K 96 (Smith, Kline and French Laboratories, Philadelphia). Seventy-four per cent recovered. They believe the preparation to be effective for the following reasons: 1. The favorable clinical and hematologic response took place rather sharply about the fifth day of treatment, irrespective of how long the patient had been ill prior to treatment. 2. The subsequent hematologic improvement in practically all cases followed the same orderly pattern. 3. The mortality is the lowest of any published series of like size. 4. Certain laboratory studies, to be reported on at a later date, support the clinical data.

Results of Fifteen Hundred Blood Transfusions.—Polayes and Morrison have analyzed the results obtained from 1,500 blood transfusions performed on 1,000 patients suffering from various diseases. Unmodified whole blood was used. The average dose for adults was 500 cc. 1. Of 1,000 cases receiving a total of 1,500 blood transfusions, the results were either of doubtful benefit or of no effect whatever in 71.7 per cent. 2. Blood transfusion proved to be a life-saving procedure in 1.4 per cent of the cases. Most of these were patients who suffered a sudden loss of a large quantity of blood. 3. Some definite adjuvant beneficial effects were derived from transfusion in 23.3 per cent of the cases. 4. The reaction to the transfusion was unfavorable and the results harmful in 3.7 per cent of the cases. 5. The transfusion was apparently contributory to death in 0.9 per cent of the cases. 6. The excellent results from blood transfusion in the wide variety of diseases as reported by other writers could not be obtained in this investigation. Definitely beneficial results should be expected only in the type of cases indicated in this study. These results are in striking contrast to those reported by the British Red Cross, which in a study of 1,215 transfusions found good or especially good results in 57 per cent, satisfactory results in 22 per cent, improvement followed by death in 14 per cent and no apparent result in 7 per cent.

Internal Drainage.—The cause and clinical picture of postoperative massive collapse of the lung (pulmonary atelectasis) is explained by the Faulkners on a combined mechanical and infectious basis. Postoperative pulmonary atelectasis is due primarily to the bronchial obstruction resulting from the presence of excess intrabronchial secretion and the influence of "internal drainage" on these secretions. By "internal drainage" is meant the spilling of material from place to place within the tracheobronchial tree to spread infection, obstruct bronchi and shut off the air flow to a portion of the lung. This spilling depends on the amount and viscosity of the secretion and the posture of the patient. In certain pulmonary diseases, the excess secretions are already present within the tracheobronchial tree before the operation; but in other conditions, the secretions are aspirated from the mouth and nasopharynx during or immediately following the operation. Internal drainage accounts for the varied onset of postoperative pulmonary atelectasis, diversity of symptoms, predilection of sites, extensiveness, migrations, recurrences, and the response to various treatments. The authors do not believe that vasomotor, phrenic, vagus or sympathetic reflexes, angioneurotic edema or compression of the chest wall are primary etiologic factors in postoperative atelectasis. Careful attention to the mouth hygiene, the posture of the patient during and following the operation, the prevention of aspiration and the removal of intrabronchial secretions should either prevent atelectasis and other postoperative pulmonary complications or decidedly lessen the frequency of their occurrence. Postural exercises, carbon dioxide inhalations and bronchoscopic treatments have proved of value in the management of patients with postoperative atelectasis when carried out in accordance with the principles of internal drainage.

American Journal of Physical Therapy, Chicago

9: 141-168 (Sept.) 1932

Some New and Recent Benefit from Roentgen-Ray Treatment in Difficult Cases. J. W. Torbett, Marlin, Texas.—p. 145.

Scientific Crime Detection and Prevention, with Especial Reference to Recent Kidnapping. H. Goodman, New York.—p. 147.

Simplified Hemorrhoidectomy. J. B. H. Waring, Cincinnati.—p. 149.

Apparatus for Radium Therapy of Rectal Cancer. E. P. Grenier, Montreal, Canada.—p. 151.

Rôle of Electricity in Treatment. E. P. Cumberbatch, London, England.—p. 156.

New Electroshadowless Otoscope. G. W. McAuliffe, New York.—p. 160.

American Journal of Tropical Medicine, Baltimore

12: 331-406 (Sept.) 1932

Effect of Long Continued Subtropical Summer on High Blood Pressure. I. I. Lemann, New Orleans.—p. 331.

Attempts to Transmit Yellow Fever with Certain Brazilian Mosquitoes (Culicidae) and with Bedbugs (Cimex Hemipterus). H. W. Kumm and M. Frobisher, Jr., Bahia, Brazil, South America.—p. 349.

*Value of Plasmochin in Treatment of Malarial Infections Encountered in Some Cases of Blackwater Fever and Quinine Hemoglobinuria. J. C. Paterson, Barrancabermeja, Colombia, South America.—p. 363.

Malaria Prophylaxis with Chinoplasmin: Field Experiment. P. F. Russell and R. L. Holt, Manila, P. I.—p. 369.

Viability of Cysts of Endamoeba Histolytica Under Variable Conditions. T. Wight and V. Wight.—p. 381.

*Accurate Method for Numerical Determination of Endamoeba Histolytica in Vitro and Its Possible Use with Other Intestinal Protozoa: Suggested Clinical Application. M. Paulson, with assistance of M. Morgenstern, Baltimore.—p. 387.

Cysts of Dysentery-Producing Endamoeba Histolytica in a Baltimore Dog. J. Andrews, Baltimore.—p. 401.

Plasmochin in Treatment of Malarial Infections.—Paterson encountered malarial parasites in 37.5 per cent of a series of sixteen consecutive cases of blackwater fever and, in

all but one, the subtertian form was the offender. Three of the six positive cases showed subtertian ring forms in such abundance that active antimalarial measures appeared to be imperative. Quinine cannot be safely administered in such cases of blackwater fever because of the danger of producing further hemolysis. On the other hand, plasmochin can be safely used at any stage of the disease and apparently possesses sufficient action to control the infection until such a time as quinine can be given. This drug should be equally useful in treating malaria attacks in individuals who suffer from hemoglobinuria as a result of quinine intolerance. The author reports four cases that were successfully treated with plasmochin.

Numerical Determination of Endamoeba Histolytica in Vitro.—Paulson found that by the use of a hemocytometer Endamoeba histolytica can now be studied quantitatively in culture under varying conditions, making it possible to analyze and evaluate culture methods. The contents of the culture, save for the solid horizontal or slanting base, are gently but thoroughly mixed, preferably with a capillary pipet, so as to insure uniform distribution of the protozoa, and a drop is placed in the hemocytometer. The organisms are counted and totals determined as are cells in spinal fluid: the result equals the number of organisms per cubic millimeter of culture. As a result of more limited observations, it has been found to apply equally well to Endolimax nana and, with slight modification, to Trichomonas hominis. This method might be employed similarly in quantitative cultural observations of other amebas, ciliates and flagellates. Differential tabulation of cysts and trophozoites, as well as of several species of protozoa living together in material to be examined, is possible by the addition of an equal quantity of iodine solution to a specific amount of material to be examined, the total then being multiplied by 2 to account for dilution, to secure the number of varieties of organisms per cubic millimeter of material. This method of numerical determination of Endamoeba histolytica was modified so as to be applied clinically by securing definite quantities of material directly from the rectum and sigmoid through a rectosigmoidoscope, and from freshly passed feces. A drop of this material in suspension was placed under the cover slip in a hemocytometer and the procedure in counting was the same as for numerical determinations of organisms per cubic millimeter of culture.

Annals of Internal Medicine, Ann Arbor, Mich.

6: 307-456 (Sept.) 1932

Clinical Aspects of Gastric Secretion. A. L. Bloomfield, San Francisco. —p. 307.

Standards of Normal in Gastric Secretion. W. C. Alvarez, Rochester, Minn.—p. 314.

Asthenia: Clinical Types and Principles of Therapy. E. L. Bortz and G. M. Piersol, Philadelphia.—p. 319.

Clinical Study of Atrophic Tongue. W. S. Middleton, Madison, Wis. —p. 352.

*Significance of Fever and Blood Protein Changes in Regard to Defense Against Infection. H. A. Reimann, Minneapolis.—p. 362.

*Poisonous Spider Bites: Newer Developments in Our Knowledge of Arachnidism. E. Bogen, Olive View, Calif.—p. 375.

Studies on Urinary Proteose: II. Skin Reactions and Therapeutic Applications in Hay Fever. W. Darley and R. W. Whitehead, Denver.—p. 389.

Successful Treatment of Hay Fever and Pollen Asthma. A. Sterling, Philadelphia.—p. 400.

Cardiac Failure: Report of Case of Cardiac Decompensation of Fourteen Months' Duration. E. J. Stieglitz, Chicago.—p. 406.

Generalized Myositis Fibrosa. E. H. Schwab, P. Brindley, M. Bodansky and T. H. Harris, Galveston, Texas.—p. 422.

Roentgenologic Diagnosis of Early Pulmonary Tuberculosis. B. R. Kirklin, Rochester, Minn.—p. 435.

Medical Men Who Have Attained Fame in Other Fields of Endeavor: III. Medical Humorists: VI. Medical Men as Inventors: V. Medical Men as Explorers. E. Weinfield, New Orleans.—p. 444.

Significance of Fever and Blood Protein Changes in Infection.—Reimann reviews the literature and states that evidence has been presented by many investigators to show that fever exerts a beneficial influence in the defense mechanism against infection. It has been shown that temperature at fever levels tends to influence the growth of bacteria adversely, to diminish the potency of toxins, to favor phagocytosis and to stimulate the development of immune bodies. In the experiments reported by the author it is shown that the increased viscosity of the plasma which occurs during febrile infection as a result of increase of certain plasma proteins enhances the specific agglutinative power of specific immune serum. Other investigators have shown that agglutination is an important factor in the restriction of bacterial growth and spread in the tissues. He therefore suggests that the plasma protein changes that occur during infectious diseases and enhance agglutination are important factors in the defense mechanism against infection.

Poisonous Spider Bites.—Bogen says that the black widow spider is found in more than half of the United States and that 380 instances of systemic poisoning from its bite have been reported. Unnecessary operations on such patients could be avoided if all physicians recognized that an acute condition with rigidity of the abdomen, fever and leukocytosis, and occasionally nausea and vomiting, may supervene as a result of the bite of a black spider. It may be differentiated, however, from acute abdominal lesions requiring surgical intervention by the presence of spasm in muscles other than those of the abdomen, by the absence of marked local abdominal tenderness, and by the concomitant rise in the pressure of the blood and spinal fluid. The mortality rate is low and patients usually recover spontaneously within a few days, but the suffering is intense and seventeen fatal cases have been reported. The prevention of arachnidism depends on popular education as to the danger of these spiders and the advisability of their eradication. Local treatment of the bites should consist of simple antiseptic applications; additional trauma by incisions, cauterization or the injection of hypothetic antidotes should be avoided. Stimulation and alcoholic drinks are usually contraindicated. Harmful surgery may be obviated by correct diagnosis. Opiates and hypnotic drugs may be used as palliative measures, together with sedative hydrotherapy and the reduction of intracranial pressure by the administration of hypertonic solutions or spinal puncture. Specific treatment with serum from convalescent victims is of value, particularly if administered early.

Archives of Ophthalmology, Chicago

8: 321-488 (Sept.) 1932

*Resection Operation for Strabismus. C. Berens, New York.—p. 321.

Angioid Streaks of Retina and Pseudoxanthoma Elasticum. G. Clay, Atlanta, Ga.—p. 334.

Congenital Bilateral Palsy of Abducens. W. H. Phillips and Josephine K. Dirion, Cleveland, and G. O. Graves, Columbus, Ohio.—p. 355.

Nevus Flammeus of Face and Globe: Associated with Glaucoma, Vascular Changes in Iris and Calcified Vascular Growth in Left Occipital Lobe of Brain, with Right Homonymous Hemianopia. H. H. Tyson, New York.—p. 365.

Gyrate Atrophy of Choroid and Retina (Fuchs). H. H. McGuire, Winchester, Va.—p. 372.

*Vernal Conjunctivitis: Observations on Eighty-Seven Cases at Wills Hospital (1929-1931). L. Lehrfeld, Philadelphia.—p. 380.

*Color Photography of Fundus Oculi: Description of a New Method. W. A. Mann, Jr., Chicago.—p. 405.

Retinitis Punctata Albescens: Report of Two Cases in Which Dots Disappeared. W. S. Atkinson, Watertown, N. Y.—p. 409.

Biochemistry of the Lens: I. Permeability of Capsule of the Lens. S. R. Gifford, J. E. Lebensohn and I. S. Puntenny, Chicago.—p. 414.

Resection Operation for Strabismus.—Resection by the Reese method has been attended by complications that have been eliminated by the technic described by Berens. The principal features of this technic are: 1. A curved conjunctival incision, with the concavity toward the cornea, far from the stump of the muscle, which reduces the visible postoperative scarring and lessens the tendency to granulation and infection. 2. Winged incisions from the insertion of the tendon and no disturbance of the capsule of the muscle, which should decrease the tendency of the muscle to become atrophic. 3. Two double-armed sutures so placed in the muscle that their action may be increased after the conjunctival wound is closed, and their bite so secure that the dressings may be removed the day following operation. The indications for resection have so diminished since retroplacement has been used that the author now performs many more retroplacement operations than resection operations.

Vernal Conjunctivitis.—Observations on eighty-seven cases of vernal conjunctivitis, in which careful records have been made at the Wills Hospital during the years 1929, 1930 and 1931, are reported by Lehrfeld. He believes that the first and most important factor is that vernal conjunctivitis may be two separate and distinct diseases instead of one, caused by the same excitants, just as eczema and urticaria are different diseases.

This theory is prompted by the following facts: 1. Not a single case of limbic vernal conjunctivitis was accompanied by pathologic changes of the lids characteristic of the cobblestone lid type. 2. Negroes manifest only the limbic variety. 3. The pathologic changes in the chronic lid types may persist throughout the winter months, while the limbic form always disappears in the fall of the year. 4. Eosinophilia is highest in the limbic form. He concludes that vernal conjunctivitis exhibitis the clinical manifestations of an allergy. The negative skin reactions reported in the past are now giving way to positive ones owing to the improved methods of testing and the use of agents of varied and known strength. Since the conjunctiva and cornea are closely allied to the skin, it is anticipated that the new refinement in skin testing will reveal a far greater percentage of positive reactions in vernal conjunctivitis. In other words, negative skin reactions obtained by the present method of testing do not disprove the allergic characteristics of this disease but merely indicate that this particular type of allergy, like some sensitivities, awaits a more delicate biologic test.

Color Photography of Fundus Oculi.—Mann uses the Finlay process to take natural color photographs of the fundus. No increased light or exposure time is required over that necessary for ordinary black and white fundus photography if the hypersensitive panchromatic emulsion (Eastman) is used. This makes the process applicable to all cases suitable for ordinary photography (a dilated pupil and reasonably clear media are essential). All danger of retinal damage is thus eliminated, a factor that has been a deterrent to most previous methods. The method is not expensive, as the taking screens are used over and over and are not damaged if carefully handled. The viewing screens may also be removed from the transparencies and used for others, as desired. As many positives as required may be printed from a single negative. One may make black and white prints from the negative by printing on paper instead of lantern slide plates and omitting the use of the viewing screen. It is possible by means of so-called block-out screens to separate the primary colors in the single negative into three separate positives as a basis for color plates for the printing press.

Archives of Otolaryngology, Chicago

16: 317-468 (Sept.) 1932

Ludwig's Angina: Intra-Oral Incision in Infections of Floor of Mouth. K. M. Houser, Philadelphia.—p. 317.
Spontaneous Perforation of Benign Stricture of Esophagus: Report of Case. P. P. Vinson, Rochester, Minn.—p. 329.
Laryngeal Tuberculosis: Some Experiences and Observations. R. W. Wilkinson, Washington, D. C.—p. 331.
Cerebrospinal Rhinorrhea: Report of Two Cases. J. C. Donnelly, Philadelphia.—p. 350.
*New Test for Diagnosis of Disease of Inner Ear. N. D. Fabricant, Chicago, and I. Sommer, Vienna, Austria.—p. 360.
Hearing by Bone Conduction. B. M. Becker, Brooklyn.—p. 364.
*Use of Negative Pressure in Otolaryngology: Report of Serious Accident. W. Gordon, Philadelphia.—p. 370.

Disease of Inner Ear.—Fabricant and Sommer report eight cases of disease of the inner ear in which they used tuning forks C 1 and C 4 to produce the auricle reflex. The auricle reflex can be produced by holding the tuning fork ad concham or by placing it over the patient's forehead or mastoid prominence. The observer must be careful to employ bright daylight, so as to eliminate any possibly confusing shadows. Other pitfalls to be discounted are movements of the auricle synchronous with breathing, pulsation of the veins of the neck, chewing, talking and voluntary facial movements. In some cases they saw a preexistent, although unconscious, spontaneous movement of the auricle accentuated vividly when the tuning fork was held ad concham. In another group of cases a tuning fork held before one auricle induced a corresponding movement in the fellow auricle. The authors' observations show that the auricle reflex can be used for clinical diagnosis. If the observations are positive, involvement of the cochlear nerve should be suspected, more often primary than secondary. Of course, if the reflex is absent, a lesion of the inner ear cannot be excluded.

Use of Negative Pressure in Otolaryngology.—While it is true that suction has merits and uses, it is possible to employ the method injudiciously, as was noted by Gordon in a case reported by him. To obviate such a possibility, the otolaryngologist should make it an immutable rule to employ negative pressure, either massive or capillary, with the utmost care, gentleness and skill. The author emphasizes the following points: 1. Negative pressure has a certain value in the diagnosis and treatment of acute and chronic suppurative sinusitis. 2. It is valuable in the treatment of acute and chronic otorrhea. 3. Myringotomy should be followed with very gentle massive or capillary suction. 4. Negative pressure is indispensable in operations on the nose and throat, in laryngeal surgery and in endoscopy. 5. Negative pressure is valuable because it results in the least possible loss of tissue, the least disturbance of anatomic relations and the greatest possible conservation of function.

Archives of Surgery, Chicago

25: 433-614 (Sept.) 1932

Gastric Secretion: I. Transplanted Subcutaneous Gastric Pouch. E. Klein and E. Arnheim, New York.—p. 433.
Id.: II. Studies in Transplanted Gastric Pouch Without Auerbach's Plexus. E. Klein, New York.—p. 442.
*Squamous Cell Carcinoma of Renal Pelvis Associated with Stone and Leukoplakia. W. J. Potts, Oak Park, Ill.—p. 458.
Breaking Strength of Healing Fractured Fibulas of Rats: III. Observations on a High Fat Diet. R. M. McKeown, M. K. Lindsay, S. C. Harvey and R. W. Lumsden, New Haven, Conn.—p. 467.
Adamantine Epithelioma. R. F. C. Kegel, Baltimore.—p. 498.
Head Injuries: Experimental Study. S. B. Wortis and W. S. McCulloch, New York.—p. 529.
*Vertebral Osteochondritis. J. I. Mitchell, Memphis, Tenn.—p. 544.
Ureterodural Anastomosis for Treatment of Hydrocephalus: Report of Case. L. M. Davidoff and F. W. Bancroft, New York.—p. 550.
Surgical Treatment of Mitral Stenosis: Experimental Study. J. H. Powers, Cooperstown, N. Y.—p. 555.
*Respiratory Paralysis in Spinal Anesthesia. P. W. Harrison and Ruth Frank, Muscat, Arabia.—p. 571.
Roentgenographic Manifestations of Intestinal Obstruction. P. C. Swenson and J. S. Hibbard, New York.—p. 578.
Injuries of Thorax: Serious Pleuropulmonary Complications Following a Free Interval. J. Head, Chicago.—p. 601.
Forty-Eighth Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts and J. S. Barr, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York; G. Perkins, London, England, and P. D. Wilson, Boston.—p. 605.

Carcinoma of Renal Pelvis.—An unusual case of squamous cell carcinoma and leukoplakia of the renal pelvis subsequent to stone is reported by Potts. It was impossible to state when the carcinomatous change in this case occurred. The large number of epithelial pearls throughout the entire mass suggested a slowly growing tumor. This case showed no signs of metastasis anywhere, in contrast to the cases reported by Scholl and Kretschmer, in which early and extensive metastasis occurred.

Vertebral Osteochondritis.—Mitchell presents a case of vertebral osteochondritis which he believes to be the ninth case on record. Successive roentgenograms demonstrated the development of changes in two vertebrae that had been normal at the original examination. Regeneration of one vertebra is beginning one and one-half years after the onset. The other vertebra will probably show regeneration later. The small number of cases reported suggests the probability that the condition is being mistaken for tuberculosis of the hip by Legg, Calvé and Perthes. A favorable prognosis for complete recovery is warranted from the ultimate cure in similar conditions. The author concludes that vertebral osteochondritis is a true disease entity running a characteristic evolutionary course and tending toward spontaneous recovery with regeneration of the affected bone. The treatment consists of immobilization of the spine with appropriate apparatus, combined with general hygienic measures.

Spinal Anesthesia.—Harrison and Frank state that motor nerve fibers enjoy no immunity from the action of procaine hydrochloride; differences between the susceptibility of motor and sensory fibers are insignificant. The motor fibers leaving the cord in the third, fourth and fifth anterior cervical roots, and running through the phrenic nerve to carry motor impulses to the diaphragm, show the same susceptibility to procaine hydrochloride as other motor nerve fibers. Freedom from respiratory paralysis in spinal anesthesias that involve the cervical region must be due to some factors that protect the anterior roots from contact with the anesthetic solution. In an experimental series on the cat, these protecting factors were capricious and uncertain in their action.

Delaware State Medical Journal, Wilmington

4: 195-218 (Sept.) 1932

Roentgen-Ray Examination of Sacro-Iliac Joint. W. E. Chamberlain, Philadelphia.—p. 195.
Radium and Deep Therapy Roentgen-Ray Treatment. J. L. Weatherwax, Philadelphia.—p. 201.
Roentgen-Ray Diagnosis of Chest, with Especial Reference to Fluid. B. M. Allen, Wilmington.—p. 204.

Florida Medical Association Journal, Jacksonville

19: 97-138 (Sept.) 1932

Roentgenologic Examination in Differential Diagnosis of Abdominal Pathologic Conditions. F. K. Herpel, West Palm Beach.—p. 105.
Bronchial Asthma. E. S. Nichol, Miami.—p. 110.
Periodic Health Examinations from Standpoint of Railway Surgeon: A Responsibility and an Opportunity. T. H. Bates, Lake City.—p. 120.
Some Aspects of Thyroid Disease. F. H. Langley, St. Petersburg.—p. 121.

Illinois Medical Journal, Chicago

62: 289-384 (Oct.) 1932

Diagnosis and Treatment of Menstrual Irregularity of Functional Origin. F. E. Keene, Philadelphia.—p. 305.
*Primary Glaucoma Management. M. Goldenburg, Chicago.—p. 309.
Diagnosis and Treatment of Laryngeal Tuberculosis. F. R. Spencer, Boulder, Colo.—p. 316.
Electric Shock. H. E. Fisher, Chicago.—p. 322.
The Disabled Gallbladder. A. Brown, Omaha.—p. 336.
*Blood Transfusion. A. P. Heineck, Chicago.—p. 340.
Care of Indigent Poor, Sick and Well. C. Bennett, Champaign.—p. 344.
*Tubovalvular Gastrostomy. M. Thorek, Chicago.—p. 347.
Diseases Transmissible from Animals to Man of Major Public Health Importance. A. Hall, Springfield.—p. 350.
Surgery, Roentgen Ray and Radium in Treatment of Cancer. H. K. Scatliff, Chicago.—p. 357.
Local Anesthesia as Aid in Reduction of Fractures and Dislocations. M. D. Willcutts, Great Lakes.—p. 359.
Digitalis and Quinidine: Their Use. M. J. Hoffman, Chicago.—p. 362.
Necessity for Correlation of County Society Programs. B. Fox, West Frankfort.—p. 366.
Periarteritis Nodosa: Report of Case. G. W. Parker and M. G. Bohrod, Peoria.—p. 367.
*Pasteurized Versus Raw Milk. H. A. Harding, Detroit.—p. 374.
Congenital Syphilis. W. A. Rosenberg, Chicago.—p. 378.

Primary Glaucoma Management.—In discussing the management of glaucoma, Goldenburg takes into consideration nonsurgical management, medicinal therapy and surgical management. He believes that no surgical operation for glaucoma so far devised can remove the cause; therefore it cannot be considered as a cure. In his opinion, no operation can restore to normal function the so-called drainage angle, after peripheral iris synechiae have existed for some time. Therefore, operations devised for this purpose must attain results in other ways. The various decompression operations offer a more positive avenue of fluid escape and in addition favor fresh aqueous formation. In his experience the iridotasis operation accomplishes the desired results with less danger to the eye owing to the simplicity of the technic necessary.

Blood Transfusion.—Heineck states that blood transfusion is a most valuable therapeutic procedure; dangerous when misused; most useful, most efficacious, often life-saving when properly employed. He believes that blood transfusion is indicated after acute profuse hemorrhages, medical, obstetric, surgical or traumatic; to arrest hemorrhage that cannot be controlled by other measures; in shock associated with or consecutive to hemorrhage; as a preoperative measure to limit hemorrhage in jaundiced patients; as a preoperative and postoperative measure to prepare substandard or surgically handicapped patients, such as suffer from malnutrition, chronic infection or secondary anemia; in the postoperative treatment of conditions such as acute mastoiditis, sinus thrombosis or otitic septicemia; in uterine cancer as a preparatory or supporting measure in radium or roentgen therapy; in certain medical conditions to supply blood platelets as in purpura, normal serum as in nephroses and in some allergic conditions, or granular cells, as in agranulocytosis; also in secondary anemias and in sepsis. The author describes a transfusion method in which he uses an aspirating and propelling syringe, Bécart, provided with a piston that automatically coats the interior surface of the syringe with a special wax preparation and with needles that fit directly into the cannulated end of the nozzle.

Tubovalvular Gastrostomy.—Thorek observes that the indications for gastrostomy are numerous and that it should receive greater application. It is strongly indicated in laryngeal tuberculosis with dysphagia when nutrition suffers. The tubovalvular method of gastrostomy marks a distinct advance in obviating the two great drawbacks innate to gastrostomy procedures performed heretofore (leakage and obliteration of passage). The author describes a method by which a collar is formed from the ligamentum falciforme hepatis to safeguard further against the possibility of complications (leakage and its attendant evils). He concludes that the implantation of the tube into the abdominal wall is of the utmost importance and is carried out as follows: 1. The parietal peritoneum is united with the serosa of the stomach posteriorly. 2. The same procedure is repeated anteriorly, the serous surface of the "falciform collar" being picked up in the bite of the needle. 3. The fascia of the rectus abdominis muscle is stitched to about the middle of the tube posteriorly. This procedure is repeated anteriorly. 4. The end of the tube is united to the skin. This should be done with silk or Pagenstecher linen in such a manner that the everted mucous membrane forms at the completion of the operation a roset representing the parietal stoma.

Pasteurized Versus Raw Milk.—Harding states that it is probably true that pasteurization reduces somewhat the vitamin C content of cow's milk, though even here there is not entire agreement among the investigators of this problem. This reduction is of slight moment, since cow's milk is so deficient in vitamin C that this vitamin should regularly be supplied from other sources. The dangers connected with the use of raw milk are serious, and public health workers are practically unanimous in the conclusion that this danger can be best met by proper pasteurization. The experience of many cities on a large scale shows the wisdom of this conclusion. Pasteurization has the added advantages of slightly improving the keeping quality of the milk and of softening the curd formed in the stomach, but the principal reason for its use is the safety which this process adds to the milk supply.

Indiana State Medical Assn. Journal, Fort Wayne

25: 371-442 (Sept. 15) 1932

Use of Water Pump in Treatment of Spontaneous Pneumothorax and Pleural Effusions. P. D. Crimm and J. W. Strayer, Evansville.—p. 371.
Diphallus and Gastroschisis: Report of Case in Stillborn Infant of Seven and One Half Months' Gestation. J. R. Phillips, Michigan City.—p. 372.
Patency of Ampulla of Vater. W. E. Pennington, Indianapolis.—p. 375.
Radiographic Aspects of Kidney Tumors. H. C. Ochsner, Indianapolis.—p. 376.
Indiana University School of Medicine (April Seminar): Massive Collapse of Lung. M. J. Barry, Indianapolis.—p. 377.
Results in Clinical Use of Oxygen Chambers. L. Meiks, Indianapolis.—p. 381.
Oxygen Therapy Chambers in the James Whitcomb Riley Hospital, Indianapolis (Preliminary Report of Experimental Observations). H. M. Trusler, Indianapolis.—p. 383.
Studies on So-Called Normal Alcohol of Body. R. N. Harger, Indianapolis.—p. 384.

Journal of Allergy, St. Louis

3: 531-628 (Sept.) 1932

Histologic Changes in Allergic and Nonallergic Wheals. B. S. Kline, M. B. Cohen and J. A. Rudolph, Cleveland.—p. 531.
Improved Coseasonal Therapy. W. T. Vaughan, Richmond, Va.—p. 542.
*Perennial Versus Preseasonal Treatment of Hay Fever. L. Unger, Chicago.—p. 548.
Dermatitis Due to Contact with Orange Peel: Case Report with Successful Desensitization. Beatrice Kesten and Romola Lyons, New York.—p. 552.
*Allergic Migraine: Review of Sixty Cases. E. L. DeGowin, Ann Arbor, Mich.—p. 557.
*Localization and Specificity of Cellular Sensitization. H. J. Rinkel and R. M. Balyeat, Oklahoma City.—p. 567.
Management of Dust Asthmatic. J. A. Rudolph and M. B. Cohen, Cleveland.—p. 574.
Summer Dermatitis Caused by Common Weed. H. L. Huber and G. F. Harsh, Chicago.—p. 578.
Persistent Angioneurotic Edema: Report of Case. Erna Stantien Enderle, New York.—p. 583.
Asthma Due to Yeast (by Ingestion). S. J. Taub, Chicago.—p. 586.
Certain Phases of Digestion in Relation to Allergy. E. L. MacQuiddy and C. P. Baker, Omaha.—p. 588.
*Asthma of Luetic Origin. A. Trasoff, Philadelphia.—p. 592.

Perennial Versus Preseasonal Treatment of Hay Fever.—Unger presents a summary of the literature on the treatment of hay fever, and on the basis of the results he

obtained in eighty-eight patients with hay fever (treated in 1931) he concludes that the weight of evidence is distinctly in favor of the perennial method because it gives better results and is less dangerous. Severe constitutional reactions are a great hindrance to one's work in allergy. To avoid it some have gone so far as to add epinephrine or ephedrine to their injections and to put on a tourniquet. It is needless to point out that patients object to both of these procedures; the tourniquet is painful, and the epinephrine unsettles them. Constitutional reactions are infrequent if the injections are given once in two weeks, and the author is strongly opposed to the opinion of those who give the treatments once a month. The longer the interval, the more chance of reactions. Once in two weeks he believes to be the method of choice, and the procedure is not burdensome to most patients. The author emphasizes the fact that the perennial method is much better because in the extremely sensitive patient it gives more time to increase the dosage, and because it is more convenient for most patients and for the physicians.

Allergic Migraine. — DeGowin reports sixty cases of migraine. These were studied essentially from the allergic standpoint. In 78 per cent of the cases in which data were available there was partial or complete relief from migraine by the elimination of foods to which the patients were proved sensitive. A study of familial histories showed the incidence of migraine and other allergic manifestations to be high. The author concludes that many cases of migraine are allergic manifestations and states that his observations agree with those which have been reported by Balyeat and his co-workers and by Eyermann.

Cellular Sensitization.—According to Rinkel and Balyeat, the same exciting factor can produce many forms of allergy, depending on the localization of cells specifically sensitive. One or more of these forms may occur in the same patient, from one or several allergens. Skin tests, when positive, indicate skin sensitivity only. They are one form of allergy, not necessarily related to the others. Sharply circumscribed allergy is best illustrated by skin eruptions. It may be limited to definite areas, or to certain groups of cells in several locations. This may be due to atopic or contact hypersensitiveness. Skin testing is not a determination of clinical sensitivity; therefore it should be supplemented in every case by clinical testing. Specific elimination is the therapeutic ideal.

Asthma of Syphilitic Origin.—A case of true bronchial asthma of syphilitic origin is presented by Trasoff. This form of asthma should not be confused with syphilis of the lung, with which it may or may not be associated. Asthmatoid symptoms due to syphilis of the lung belong to the obstructive groups and should not be classified under true asthma. The author suggests that his case rightfully belongs under the classification of bacterial allergy and is probably due to hypersensitiveness to the toxic products of Spirochaeta pallida.

Journal of Comparative Neurology, Philadelphia

55: 273-578 (Aug. 15) 1932

Ampullar Organs of the Ear. R. E. Bowen.—p. 273.
Neurofibrillar Structure of Five-and-One-Half-Millimeter Cat Embryo. W. F. Windle.—p. 315.
Topography of Nuclei of Diencephalon of Cat. W. R. Ingram, F. I. Hannett and S. W. Ranson, Chicago.—p. 333.
Prenatal Development of Behavior in Albino Rat. A. W. Angulo y González.—p. 395.
Vascular Supply of Archicortex of Rat: IV. Inbred Albino Rats. E. H. Craigie.—p. 443.
Permeability of Nerve Sheaths. E. C. Cole.—p. 453.
Determination of Number of Unmyelinated Fibers in Ventral Roots of Rat, Cat and Rabbit. D. Duncan.—p. 459.
Experimental Observations on Developing Rat Retina. S. R. Detwiler. —p. 473.
Development of Nuclei and Tracts of Midbrain. R. F. Shaner.—p. 493.
Variability of Pigmentation in Hypophysis and Parathyroids of Gray Rat (Mus Norvegicus). W. H. F. Addison and Doris A. Fraser, Philadelphia.—p. 513.
Mechanism of Vision: VI. Lateral Portion of Area Striata in Rat: A Correction. K. S. Lashley and Margaret Frank.—p. 525.
Transplantation of Spinal Ganglions in White Rat: Study of Morphologic Changes in Surviving Cells. C. W. Tidd.—p. 531.
Studies in Regeneration of Central Nervous Tissues: I. Origin of Nerve Cells in Regeneration Cerebral Ganglions in the Earthworm. H. G. Schwartz.—p. 545.
Secretory Cells in Midbrain of the European Minnow (Phoxinus Laevis L.). E. Scharrer.—p. 573.

Journal of Comparative Psychology, Baltimore

14: 1-181 (Aug.) 1932

Influence of Ligating One of the Common Carotid Arteries on Handedness in Rat. G. M. Peterson.—p. 1.
Order of Eliminating Blinds in Maze Learning by Rat. K. W. Spence. —p. 9.
Effect of Castration at Various Ages on Learning Ability of Male Albino Rats. W. D. Commins.—p. 29.
Supposed Visual Function of Nictitating Membrane in Domestic Pigeon. H. Friedmann.—p. 55.
Concerning Discrimination of Geometric Figures by White Rats. P. E. Fields.—p. 63.
Observations of Apparently Unlearned Behavior. H. C. Sanborn.—p. 79.
Comparative Behavior of Primates: II. Delayed Reaction Tests at Bronx Park Zoo. A. H. Maslow and H. F. Harlow.—p. 97.
Ontogeny of Embryonic Behavior in Aves: IV. Influence of Embryonic Movements on Behavior After Hatching. Zing Yang Kuo, Nanking, China.—p. 109.
Test Performance of Full and Mixed-Blood North Dakota Indians. C. W. Telford.—p. 123.
Relative Values of Satisfying and Annoying Situations as Motives in Learning Process. J. D. Dodson.—p. 147.
Amplifiers for Class Room Demonstration of Action Currents. L. W. Max.—p. 165.
Sex Difference in Rats on Three Learning Tasks. Q. McNemar and C. P. Stone.—p. 171.

Journal of Industrial Hygiene, Boston

14: 243-282 (Sept.) 1932

Occurrence of Boils Among Men Working in Coal Mines. S. W. Fisher.—p. 243.
Control of Silicosis Hazard in Hard Rock Industries. III. Design and Operation of Dust Control System for Use with Pneumatic Rock Drills on Open Excavation. T. Hatch, H. Warren, Boston, and G. S. Kelley, New York.—p. 246.
Cutaneous Papillomas Among Patent Fuel Workers in Relation to Malignant Disease. C. C. R. Downing, Cardiff, Wales.—p. 255.

Journal of Nutrition, Springfield, Ill.

5: 451-538 (Sept.) 1932

Effect of High Intake of Manganese on Growth of Rats. J. T. Skinner, Madison, Wis.—p. 451.
Diets of College Women in Relation to Their Basal Metabolism. Callie Mae Coons and Anna T. Schiefelbusch, Stillwater, Okla.—p. 459.
Effect of Feeding Irradiated Ergosterol to Cows on Vitamin D Content of Milk. W. E. Krauss, R. M. Bethke and C. F. Monroe, Wooster, Ohio.—p 467.
*Treatment of Rachitic Infants with Milk Produced by Cows Fed Irradiated Ergosterol. H. J. Gerstenberger and A. J. Horesh, Cleveland.—p. 479.
Effect of Dairy Manufacturing Processes on Nutritive Value of Milk: I. Apparent Digestibility of Fresh Whole Milk and Evaporated Milk. W. B. Nevens and D. D. Shaw, Urbana, Ill.—p. 485.
Study of Antimony Trichloride Color Reaction for Vitamin A: V. Evaluation of Colorimetric Unit on Basis of Biologic Unit for Vitamin A. E. R. Norris and Anna E. Church, Seattle.—p. 495.
Nutritive Value of Certain Animal Protein Concentrates. P. B. Curtis, S. M. Hauge and H. R. Kraybill, Lafayette, Ind.—p. 503.
Effect of Figs and Small Amounts of Raisins on Urinary Acidity. L. G. Saywell, Berkeley, Calif.—p. 519.

Treatment of Rachitic Infants with Milk from Cows Fed Viosterol.—Gerstenberger and Horesh fed two rachitic infants, after a preliminary treatment-free observation period of four weeks, to determine the type and the degree of rickets present, 500 cc. of whole milk produced at the Ohio Agricultural Experiment Station, Wooster, by cows fed daily 0.1 Gm. of viosterol having an antirachitic value of 200,000 rat units. The daily food mixture for the infants contained in addition 500 cc. of ordinary skim milk, 5 cc. of lactic acid and a sufficient amount of carbohydrate to meet the caloric requirements of the infants. Fifteen cubic centimeters of orange juice also was administered. The observations made during the treatment period, which for the one infant lasted ten and for the other eleven weeks, showed conclusively, by the use of weekly roentgenograms and biweekly blood serum calcium and phosphorus determinations, that the milk possessed antirachitic powers but that these were not of a great magnitude. The bones were not completely healed at the end of the treatment periods, the calcium levels rose to normal only at the tenth week, and the phosphorus level in one infant at the eleventh week and in the other infant not yet at the tenth week, when she was released from the hospital. Further evidence of the mildness of the antirachitic quality of the milk is the fact that the spasmophilic symptoms in one infant did not completely disappear until the eighth week. On the basis of practical experience with the feeding of cod liver oil having a rat protective potency of 0.005 Gm. a day, the author estimated that a pint of this particular milk contained slightly less than the equivalent of one-half teaspoonful of such a cod liver oil.

Journal of Pediatrics, St. Louis

1: 269-412 (Sept.) 1932

Erythroblastosis Fetalis and Its Association with Universal Edema of Fetus, Icterus Gravis Neonatorum and Anemia of New-Born. L. K. Diamond, K. D. Blackfan and J. M. Baty, Boston.—p. 269.
Postencephalitic, Ordinary and Extraordinary Children. E. D. Bond, Philadelphia.—p. 310.
Intraperitoneal Iron in Treatment of Secondary Anemias of Infancy. C. G. Grulee and H. N. Sanford, Chicago.—p. 315.
*Poliomyelitis in Preparalytic Stage with Discussion of Treatment. O. N. Torian and M. Winters, Indianapolis.—p. 326.
Early Acute Anterior Poliomyelitis Without Increase of Cells in Spinal Fluid. S. O. Levinson, Chicago.—p. 337.
Blood Grouping in Poliomyelitis. E. B. Shaw, H. E. Thelander and K. Kilgariff, San Francisco.—p. 346.
*Diagnostic Value of Levinson Test. C. R. Messeloff, New York.—p. 349.
Antiques of Pediatric Interest. T. G. H. Drake, Toronto, Canada.—p. 356.

Poliomyelitis in Preparalytic Stage.—Torian and Winters review the literature and state that while the experimental evidence on monkeys justifies the use of human immune serum intraspinally and intravenously in the treatment of human poliomyelitis, there is no definite proof of its value. They report four cases which were diagnosed as preparalytic poliomyelitis and treated with human convalescent serum and three cases in which the symptoms were those of preparalytic poliomyelitis but spinal fluid examinations did not bear out the diagnosis. The authors emphasize the importance of the spine sign, and the necessity of examining for it in sick children the cause of whose illness is not otherwise evident. They believe that it is often overlooked in the absence of an epidemic of poliomyelitis.

Levinson Test.—According to Messeloff, in the diagnosis of meningitis the Levinson test is easily performed, requires no special laboratory equipment or knowledge, and gives easily read end-results, as a rule within twenty-four hours. In the author's series of cases (five of which are reported in detail) it has proved itself to be reliable and useful as an aid in the differential diagnosis of cases in which the symptoms and signs indicate the presence of a meningeal process but the etiology is uncertain. Like most other reactions of this nature, it is not infallible and occasionally gives false readings. The result of each test must always be judged in the light of the available clinical observations and cannot be used as an absolute criterion on which to base a diagnosis of tuberculous meningitis. The author suggests that the test be considered negative, no matter what the ratio, if less than the following minimal amounts of precipitate are present: 1 mm. in the sulphosalicylic acid tube and 5 mm. in the mercuric chloride.

Journal of Preventive Medicine, Chicago

6: 341-424 (Sept.) 1932

Studies of Distribution of Immunity to Yellow Fever in Brazil: I. Postepidemic Survey of Magé, Rio de Janeiro, by Complement-Fixation and Monkey-Protection Tests. F. L. Soper, M. Frobisher, Jr., J. A. Kerr and N. C. Davis, Rio de Janeiro, Brazil, South America.—p. 341.
Demonstration of Toxic Factor in Stools and Urines of Poliomyelitis Patients. J. A. Toomey, Cleveland.—p. 379.
Pathologic Reactions in Guinea-Pigs Injected with Standardized Stool Emulsions from Poliomyelitis Patients. J. A. Toomey, Cleveland.—p. 387.
Neutralization Experiments in Poliomyelitis: Results of Injections of Stool Emulsions in Animals Previously Passively Immunized with Convalescent Poliomyelitis Serum. J. A. Toomey, Cleveland.—p. 397.
Further Bacteriologic Study of Bacterial Flora of Throat of Normal Persons and Persons with Minor Respiratory Infections, with Especial Reference to Pneumococcus. M. H. Brown and Elizabeth Anderson, Toronto, Canada.—p. 407.
Experiments in Transmission of Trypanosoma Hippicum Darling with Vampire Bat, Desmodus Rotundus Murinus Wagner, as Vector in Panama. L. H. Dunn, Panama, P. R.—p. 415.

Medical Journal and Record, New York

136: 221-264 (Sept. 21) 1932

Observations on the Depression and Public Health. D. B. Armstrong, New York.—p. 221.
Pseudo-Schick Reaction and Diphtheria Carriers. F. Herb, Chicago.—p. 222.
Vertebral Arthritis. W. J. Moore and D. Kyle, Glasgow, Scotland.—p. 224.
Ether in Abdominal Surgery. P. G. Potenciana, Manila, P. I.—p. 227.
Halitosis. J. I. Kemler, Baltimore.—p. 230.
The Sympathetic in Epilepsy. E. A. Tracy, Boston.—p. 232.
Abdominal Palpation of Fetus. L. Drosin, New York.—p. 234.

Medicine, Baltimore

11: 263-370 (Sept.) 1932

Syphilitic Optic Atrophies, with Especial Reference to Primary Optic Atrophy. J. E. Moore, Baltimore.—p. 263.
Experimental Epidemiology. L. T. Webster, New York.—p. 321.
Factors Concerned in Evacuation of Gallbladder. A. C. Ivy, Chicago.—p. 345.

New Jersey Medical Society Journal, Orange

29: 683-732 (Sept.) 1932

Relationship of Ringworm of the Feet and Groin. C. C. Carpenter, Summit.—p. 683.
The Foot and Its Relation to Bodily Disorders. A. D. Kurtz, Philadelphia.—p. 686.
Experiences with Six Hundred and Ten Cases of Goiter, with Especial Reference to Thyrotoxicosis. W. S. Wheeling, Windber, Pa.—p. 689.
Glaucoma. D. M. Yazujian, Trenton.—p. 693.
Psychoneuroses in Relation to General Medicine. A. Gordon, Philadelphia.—p. 697.
*Carcinoma of Breast with Unsual Metastasis. R. A. Kilduffe, H. S. Davidson and D. B. Allman, Atlantic City.—p. 701.
Relation Between Optic Nerve Pathology and Sinus Disease, with Report of Case of Neuroretinitis. H. Z. Goldstein, Newark.—p. 704.

Carcinoma of Breast with Unusual Metastasis.—Kilduffe and his associates give a detailed report of a patient with carcinoma of the breast with metastasis in the lower left leg. About a year after noticing the breast lump, the patient noticed a lump on the leg which developed a few months after bumping her shin. On admission to the hospital for operation, the breast was amputated without radical axillary dissection, as there was no gross evidence of axillary involvement. A roentgenogram of the mass over the tibia showed no evidence of bone metastasis. There was no lymph node involvement. The mass was excised and treated by roentgen ray from the time of discharge until the patient was readmitted to the hospital three months later. During the period between discharge and readmission, the patient received four roentgen treatments in accordance with the following formula: 9 inch spark gap, 5 milliamperes, 0.5 mm. copper and 3 mm. aluminum filter, 10 inch distance, and twenty minutes' exposure. In addition, a full dose was given to the inguinal glands. Despite these treatments and the fact that the wound healed, the area showed a gradual increasing induration and thickening. There was obviously a recurrence of the growth in this area, so the leg was amputated a short distance above the knee. The patient recovered satisfactorily from the operation. To date there has been no evidence of recurrence in the breast, and the amputation stump is in every way satisfactory. The unusual and infrequently encountered site of the metastasis furnishes an interesting subject for speculation. The mechanism of the metastasis is far from clear, and for this reason, at least, the case seems worthy of record.

Pennsylvania Medical Journal, Harrisburg

35: 831-944 (Sept.) 1932

Differential Diagnosis of Papillitis from Papilledema. A. J. Bedell, Albany, N. Y.—p. 831.
The Bárány Test: Its Clinical Application from Point of View of Otologist, Internist and Neurologist. J. Winston, Philadelphia.—p. 835.
Vincent's Infection of Middle Ear and Mastoid. R. A. Luongo, Philadelphia.—p. 840.
Plasma Cell Myelomas of Skull and Dura. J. D. Wilson and L. A. Milkman, Scranton.—p. 842.
General Practitioner and Industry. E. H. McIlvaine, Philadelphia.—p. 843.
Spinal Anesthesia. W. M. Kunkel, Harrisburg.—p. 845.
Value of Cystoscopy in General Medical Diagnosis: Comparison Between Symptomatic and Cystoscopic Diagnosis. P. S. Pelouze, Philadelphia.—p. 846.
Medicolegal Address. M. J. Martin, Scranton.—p. 849.
What Has Organized Medicine Done Toward Prevention of Tuberculosis? S. A. Brumm, Philadelphia.—p. 855.
Colitis. J. A. Campbell, Williamsport.—p. 859.
Place of the Woman's Auxiliary in Organized Medicine: Some of Its By-Products. Mrs. W. J. Freeman, Philadelphia.—p. 860.

Philippine Islands M. Assn. Journal, Manila

12: 255-304 (June) 1932

Chronic Nephritis, Discovered at Autopsy. L. Gomez, Manila.—p. 255.
Importance of Medical Ethics. B. J. Valdes, Manila.—p. 258.
Neosalvarsan in Wassermann and Kahn Positive Lepers. Elisa Roxas-Pineda, Manila.—p. 264.
Preliminary Studies by the Office of Public Welfare Commissioner on Different Brands of Tiki-Tiki Extract. D. Belmonte, Manila.—p 273.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

7: 93-112 (Sept.) 1932

Light and Air in Maintenance of Health. L. Hill.—p. 95.
Hydrotherapy Treatment in General Hospital. J. C. Elsom and Frances M. Hawkins.—p. 96.
Flatfoot and Its Electrical Treatment. C. F. O. White.—p. 98.
The Marine Climate and Children. R. K. Brown.—p. 100.
The Margin of Safety in Use of Electricity. B. D. H. Watters.—p. 101.
Spas and Spa Treatment in Europe. M. B. Ray.—p. 103.

British Medical Journal, London

2: 539-576 (Sept. 17) 1932

Acute Intestinal Obstruction. H. S. Newland.—p. 539.
Id.: W. I. de C. Wheeler.—p. 540.
Id.: A. H. Burgess.—p. 542.
Shock in Acute Obstruction of Small Intestine. V. Z. Cope.—p. 544.
Acute Intestinal Obstruction. D. P. D. Wilkie.—p. 545.
Id.: H. J. Paterson.—p. 546.
Statistics of Acute Intestinal Obstruction. R. M. Vick.—p. 546.
*Coronary Thrombosis. J. Parkinson.—p. 549.
Importance of Vocational Guidance for Preservation of Health of Industrial Worker. A. Macrae.—p. 553.

Coronary Thrombosis. — Parkinson discusses the relation of angina pectoris to coronary thrombosis and states that angina pectoris is a serious disease of the heart which is manifested by pain across the chest or at the sternum, often extending into the arms, and which is due to deficient coronary circulation or imperfect blood supply. There are two main varieties, but their specific pain differs only in intensity, and their pathology has a common factor in myocardial ischemia. When the pain is brief and depends on exertion, anginal pain is known as angina of effort and arises from ischemia due to localized arterial spasm. When an attack of anginal pain is unrelated to exertion and sufficiently prolonged, and complicated by the symptoms of infarction, it is known as coronary thrombosis and arises from the resulting necrotic ischemia. Between these two varieties all grades of angina pectoris are encountered, in the main depending on the severity and extent of the coronary disease and the effect on the myocardium—whether the ischemia is transient (arterial spasm) or permanent (infarction). Cases of angina pectoris range from simple to severe, present a similar pain (anginal) of varying intensity, and show at their source a vascular identity. Angina of effort may be initiated, complicated or terminated by coronary thrombosis. By this a simple angina (of effort) can be converted into a sort of compound or complicated angina (with shock, and so on). The correlation between anginal pain and vascular lesion is not exact, for the worst cases of angina of effort approximate coronary thrombosis. Angina of effort is fairly inclusive of all cases of angina pectoris excluding coronary thrombosis, cases with spontaneous attacks of pain at rest being almost invariably subject to angina on exertion. Too much stress has been laid on the gravity of angina pectoris. It is inseparable from a risk of sudden death, but this may be deferred for years. In attacks of coronary thrombosis and in the severer grades of angina of effort the pain is extreme and the danger is great, but milder forms are common and often run a tolerable course. There is every gradation between mild angina of effort and severe coronary thrombosis, as there is every grade of coronary disease. Too much attention has been centered on the anginal death, and too little on the anginal life and its management.

East African Medical Journal, Nairobi

9: 117-150 (Aug.) 1932

Angina Pectoris, True and False. A. J. Jex-Blake.—p. 118.
Calcium Treatment in Tropical Ulcer. L. J. A. Loewenthal.—p. 136.

Irish Journal of Medical Science, Dublin

No. **80:** 381-533 (Aug.) 1932

Report of the Rotunda Hospital (Nov. 1, 1930, to Oct. 31, 1931). B. Solomons, G. S. Smyth, R. V. Dowse, F. S. Bourke, C. L. McDonogh and B. Crichton.—p. 381.
Clinical Report of the Coombe Lying-In Hospital, 1931. T. M. Healy, R. M. Corbet and D. F. Hanly.—p. 445.
Clinical Report of the National Maternity Hospital. J. F. Cunningham, Kathleen Kennedy and J. Coffey.—p. 491.

Journal of Laryngology and Otology, Edinburgh

47: 657-724 (Oct.) 1932

Labyrinthitis, Complication of Middle Ear Suppuration: Clinical and Pathologic Study. A. L. Turner and J. S. Fraser.—p. 657.
Genesis of Nasal Polypi. G. S. Williamson.—p. 667.
Relation of Diphtheria and Diphtheria Carriers and Mastoid Disease to Tonsils and Adenoids. R. G. Brown.—p. 673.

Journal of Pathology and Bacteriology, Edinburgh

35: 657-816 (Sept.) 1932

Antigenic Properties of Different Fractions of Staphylococcus. K. W. Goadby.—p. 657.
*Precipitation of Diphtheria Toxoid by Metallic Salts and Antigenic Value of Precipitates So Formed. Margaret Llewllyn Smith.—p. 663.
Rabbit as Means of Distinguishing the Human from the Bovine Type of Tubercle Bacillus: Lesions Caused in Rabbit by Tubercle Bacilli of the Human Type. L. Cobbett.—p. 681.
*Production of Bacteriotropins for Hemolytic Streptococci by Patients Infected with that Organism. R. Hare.—p. 701.
Postembryonic Development of Erythrocytes of Albino Rat. Christianna Smith.—p. 717.
Primary Round-Celled Sarcoma of Peritoneum. T. F. Hewer.—p. 727.
Tuberculosis of Systemic Arteries with Fatal Rupture: Report of Two Cases. H. L. Sheehan and R. Whitehead.—p. 733.
Occurrence of Clumps of Asbestosis Bodies in Sputum of Asbestos Workers. M. J. Stewart, N. Tattersall and A. C. Haddow.—p. [illegible]
Pathologic Changes Produced in Tissues by Corrosive Sublimate, with Especial Reference to Early Phases of Cell Degeneration and to Changes in Blood Fat. R. F. Ogilvie.—p. 743.
Red Cells in Microcytic Anemia (Witts). C. Price-Jones.—p. 759.
Ligation of Common Bile Duct. G. R. Cameron and C. L. Oakley.—p. 769.
*Some Observations on Eosinophil Cell. J. H. Biggart.—p. 799.

Precipitation of Diphtheria Toxoid by Metallic Salts. — According to the experiments of Smith, on guinea-pigs, diphtheria toxoid can be precipitated from solution by salts of most metals having insoluble hydroxides, by some phosphates and by various gelatinous precipitates. The toxoid can in most cases be recovered by elution in phosphate solution, or solution in sodium tartrate or citrate. Toxoid precipitated by various precipitants and at various hydrion concentrations is from five to fifty times as pure as the original. The yields of specific toxoid are in most cases from 70 to 95 per cent. Evidence is produced that the toxoid is adsorbed on the gelatinous precipitate of the hydroxide and so on. The washed precipitates are in general better antigens than the original toxoid, the best results being obtained from precipitates of colloidal aluminum hydroxide, zirconyl chloride, calcium phosphate and alum. Combination of acid precipitation with precipitation by metallic salts results in an efficient antigen with an extremely high degree of purity.

Bacteriotropins and Hemolytic Streptococci. — Hare describes in detail the fluctuations of bacteriotropins obtaining in eight cases of puerperal infection and states that those who ultimately recovered were patients with uncomplicated uterine infections or infection of the uterus spreading to the pelvic tissues, the peritoneum, or the blood stream with development of metastatic infections, and that the fatal cases were those with diffuse peritonitis or with generalized blood stream infection. He concludes that bacteriotropins for the homologous organisms have been shown to be present in the serum of cases of hemolytic streptococci infection of the uterus before the fall of temperature. The length of time they persist during convalescence is probably dependent on the severity of the infective process. They are not present in the serum of rapidly fatal cases but do appear during the later stages of more chronic but fatal infections. Death is not preceded by a fall in bacteriotropic immunity.

Eosinophil Cells. — Biggart observed that the eosinophil cell of the tissues is an emigrated eosinophil leukocyte. Local eosinophilia occurs at the expense of the circulating eosinophils. Local eosinophilia may persist after the disappearance of the general eosinophilia. Local eosinophilia can be experimentally reproduced by injections of protein and peptone in guinea-pigs. Amino-acids are without effect. The eosinophil infiltration is removed by way of the lymphatics. It is suggested that the local eosinophilia of pathologic tissues is due to the presence of protein in the infiltrated area. General eosinophilia can be produced by repeated injections of protein. Egg albumin also produces a general basophilia. General eosinophilia is accompanied by an eosinophil infiltration of the spleen and by an eosinophil reaction of the marrow. The eosinophil is formed

in the marrow and in adult life in the marrow alone except in cases of blood dyscrasias with myeloid metaplasia in other organs.

Journal of Tropical Medicine and Hygiene, London

35: 273-288 (Sept. 15) 1932

Diseases of Australian Aborigines. H. Basedow.—p. 273.
New Variety of Geotrichum Matalense (Geotrichum Matalense Var. Chapmani). A. Castellani.—p. 278.
Variations of Hydrogen Ion Concentrations in Certain Carbohydrate Culture Mediums Caused by Bacilli of Genus Castellanus (Cerruti). S. Signorelli.—p. 280.

Lancet, London

2: 551-604 (Sept. 10) 1932

Surgery of Posterior Cranial Fossa. D. Armour.—p. 551.
*Agglutination Reaction in Variola. C. R. Amies.—p. 558.
Some Factors to Be Taken into Account in Treatment of Hypertony. I. Harris.—p. 560.
*Further Studies on Anterior Pituitary-Like Hormone, with Especial Reference to Irregular Uterine Bleeding. A. D. Campbell.—p. 561.
Clinical Observations on Malaria Treated with Tebetren. D. G. Stoute.—p. 565.
Cholecystography. J. F. Brailsford.—p. 566.

Agglutination Reaction in Variola.—Amies obtained a supply of virulent material (crusts and seropus) from severe cases of smallpox from Calcutta and a similar material from mild cases of smallpox (alastrim) from England and inoculated into the skin of a rhesus monkey by scarification a 1 in 100 saline suspension of the Calcutta variola scabs. The material proved of low virulence and resulted only in the production of a few small papules. These were lightly scraped on the fourth day of infection and the pulp so obtained was used to infect a rabbit, the pulp being ground up in saline solution and injected intradermally into the shaved skin of the back. Four days later the animal was killed and the papules were excised with aseptic precautions. The tissue removed was cut up and ground in a mortar with distilled water. The resulting suspension was placed in a separating funnel with an equal volume of ether to extract the fatty materials. At the end of twenty-four hours the lower aqueous layer was drawn off and then centrifugated for two hours at an approximate speed of 6,000 revolutions a minute. The sediment so obtained was resuspended in distilled water and again subjected to rapid centrifugation for two hours; then it was suspended in 0.25 per cent formaldehyde in physiologic solution of sodium chloride and centrifugated at a low speed until all débris had been precipitated. Smear preparations of the supernatant fluid showed large numbers of elementary bodies with practically no other formed elements. The English variola material, being fresh, produced a more satisfactory reaction when inoculated in the skin of a monkey, and the pulp obtained was sufficient for the preparation of an elementary body suspension directly from the monkey tissue. Owing, however, to the hemorrhagic nature of the lesions it was necessary to repeat the process of rapid centrifugation four times before a pure suspension could be obtained. A rabbit was inoculated intradermally, and the reaction produced was not so marked as that obtained with the Calcutta strain of virus, but a satisfactory suspension was eventually obtained from material excised on the fourth day of infection. The author concludes that variola elementary body suspensions were agglutinated by the serum of patients convalescent from either the mild or the severe type of smallpox, but vaccinia elementary bodies were not agglutinated even in the highest concentrations of such serums.

Studies on Anterior Pituitary-Like Hormone.—In the treatment of irregular uterine hemorrhage by hypodermic injection of the anterior pituitary-like hormone extracted from human placentas, Campbell emphasizes the following points: 1. There are several types of irregular uterine bleeding which may be distinguished by their menstrual histories. In the selection of cases for treatment, correct diagnosis is essential; the organs in the pelvis must be palpably normal, and the presence of neoplasms of the uterus must be excluded. 2. Menorrhagia and metrorrhagia due to inflammatory diseases are aggravated. 3. Metropathia hemorrhagica responds particularly well. Pain is taken to signify that the musculature has returned to normal tone and that the hyperplastic endometrium is being rapidly expelled. 4. Response is not so consistent in the metrorrhagia of puberty, and treatment is followed by periods of amenorrhea. 5. Menopausal symptoms are alleviated. 6. Mastalgia, if accompanied by disturbed menstrual cycles, frequently subsides. 7. No permanent improvement is noted in simple polymenorrhea. The symptoms of dysmenorrhea are intensified. 8. There is no effect in pregnancy, and no effect on normal menstrual cycles as regards interval, amplitude or duration; no local or constitutional symptoms are observed. 9. It is considered that the effect of the anterior pituitary-like hormone is to cause the ovary to resume a complete and balanced endocrine activity, in place of one that is unbalanced and incomplete. The extract used in these studies was prepared in the biochemical laboratory of McGill University by Collip. Descriptions of the method of preparation and physiologic properties of the anterior pituitary-like hormone have been published previously by Collip.

Medical Journal of Australia, Sydney

2: 317-346 (Sept. 10) 1932

*Incidence of Punctate Basophilia. W. T. Nelson, L. Lockwood and Kate Mackay.—p. 317.
Bright's Disease: Its Classification. G. T. James.—p. 321.
The Fundus in Nephritis. J. C. Douglas.—p. 326.
Some Aspects of Renal Complications of Pregnancy. R. Griffiths.—p. 327.
Renal Function Tests and Their Application to Surgery. G. R. Davidson.—p. 329.

Incidence of Punctate Basophilia.—Nelson and his associates made estimations of stippled cells on blood films from groups of normal young adult workers and then compared the results with those obtained from men suffering from lead poisoning or exposed to that occupational risk. These were stained by Sellers' method and examined by the dark ground technic. Two hundred and fifty-five men with no history of exposure to lead had an average of 937 stippled cells per million red cells. Fifty-nine men with a history of slight exposure to lead had 4,335 stippled cells, forty-one men with a severe lead occupational hazard had 14,220 stippled cells, and twelve men (of the forty-one) suffering from lead poisoning had 36,382 stippled cells per million red cells. As the lead hazard becomes greater, the percentage of persons with high stippled cell counts increases. Twelve men working in lead accumulator factories and suffering from marked lead poisoning had each more than 20,000 stippled cells per million erythrocytes. Of 255 men with no history of exposure to lead, none had a count exceeding 10,000 punctate basophilic cells. Among the naval ratings and trainees, stippled cell counts exceeding 10,000 were found to have a definite relationship to a lead hazard, even though the exposure was some time previously. There appears to be no difference between the appearance of the stippled cells seen in blood films from cases of lead poisoning and those found in normal controls. There is a quantitative difference in regard to the coarsest variety of cell granules, in that, as the degree of the lead hazard of a group of men increases, the proportion of stippled cells exhibiting this grade of punctation increases. In cases of lead poisoning they form 30.5 per cent, while in normal controls they amount to 15.3 per cent of the stippled cells. The persons with lead poisoning had, on an average, thirty-eight times as many stippled cells as the normal controls, and sixty-nine times as many of the coarsely stippled variety. Smokers as a class do not differ from nonsmokers in regard to the numbers of stippled cells. The importance of considering all possible causes of high stippled cell counts is illustrated by the fact that a patient with pernicious anemia had 20,000 stippled cells per million erythrocytes.

Chinese Medical Journal, Shanghai

46: 749-852 (Aug.) 1932

Some Observations on Treatment of Cardiorenal Disease. W. W. Cadbury.—p. 749.
Distant Neurologic Effects of War Injuries. D. C. Su.—p. 763.
Note on Use of Artificial Pneumothorax in Lobar Pneumonia. H. G. Anderson.—p. 769.
Operation for Late Cases of Strangulated Hernia. G. C. Dorling.—p. 775.
Familial Degeneration of Cornea. C. H. Chou.—p. 777.
Suggestive Skin Test for Susceptibility to Cholera. H. Yu, P. H. Chen and K. F. Chen.—p. 799.
Effect of Lecithin on Opium Addicts: Report on Work Done in Anti-opium Hospital of National Opium Suppression Commission in Nanking. W. C. Ma.—p. 806.
The Mission Hospitals. J. L. Maxwell.—p. 820.

Presse Médicale, Paris

40: 1493-1508 (Oct. 5) 1932

Large Pulmonary Gummas: Regressive Evolution and Cure Studied by Roentgenography. Merklen, M. Wolf and D. Sichel.—p. 1493.
Silicotic Pulmonary Nodule. A. Policard.—p. 1495.
Visibility of Sinuses of Dura Mater in Encephalography. E. Moniz, A. Alves and F. de Almeida.—p. 1499.
Acute General Inflammation of Blood Vessels of Lower Extremities with Disturbance of Calcium Metabolism: Case. A. Bréchot and J. Pergola.—p. 1502.
Purulent Pericarditis of Pneumococcic Origin Cured by Epigastric Pericardotomy. E. Benhamou and P. Goinard.—p. 1504.
*Bipolar Puncture of Syringomyelic Cavity. J. Vitek.—p. 1507.

Bipolar Puncture of Syringomyelic Cavity.—Vitek employed bipolar puncture of the syringomyelic cavity for the purpose of decompression, with good results in one of his patients. This method makes use of Jirasek's principle of opening the cavity at its inferior pole to meet the conditions of hydrostatic pressure in the vertical position. The level for the inferior evacuant puncture is determined by endomyelography made by superior myelocentesis. The author's first step was to make a perimyelogram to determine whether the passage in the subarachnoid space was free. Next, an endomyelogram was made by injection of 2 cc. of iodized poppy-seed oil. This showed that the cavity occupied all of the spinal marrow, some of the oil even penetrating into the terminal filum. The principal mass of the oil was arrested at the tenth dorsal vertebra, showing that the maximum dilatation of the syringomyelic cavity was at this level. The second puncture was made at this level. To show that he had really penetrated the cavity, he first removed the oil and then about 5 cc. of syringomyelic fluid. The patient exhibited no ill effects from the intervention. The author points out that this treatment is only palliative. In his opinion the application of roentgen rays is the principal and the only effective treatment. To obtain good results, the roentgen rays should be applied to the entire extent of the cavity demonstrated by the endomyelogram. Evacuative puncture of the syringomyelic cavity is indicated only in those cases which are accompanied by radicular pains or spasmodic paralysis of the lower extremities.

Revue de Chirurgie, Paris

51: 561-650 (Oct.) 1932

*Closing of End of Duodenum in Gastrectomy. E. Forgue.—p. 564.
Relativity of Rôle of Crossed Ligaments. L. Tixier and J. de Rougemont.—p. 589.
Routes of Approach to Radial Nerve. P. Bonnet and E. Pollosson.—p. 598.
Treatment of Neuralgias of Pelvic Cancers by Neurolytic Injections. F. Condamin and G. Arnulf.—p. 635.

Closing of End of Duodenum in Gastrectomy.—In the opinion of Forgue, secure, hermetic closing of the end of the duodenum after gastrectomy is a question of major importance in gastric surgery today. Its importance results, in the the first place, from the present predominance of gastrectomy in the surgery of gastric and duodenal ulcers and, in the second place, from the superiority of gastrojejunal anastomosis to other procedures. The evident superiority of the Billroth II, especially its modern derivations, Reichel-Polya or Hofmeister-Finsterer, over the Péan-Billroth I is that it reduces to a minimum the tension on the sutures of the anastomosis. The author thinks that closing the superior part of the gastric opening and uniting the proximal branch of the first jejunal loop to the inferior part best preserves the anastomosis and also the duodenal closing by preventing duodenal reflux. The third reason for the importance of the duodenal closing is that most deaths following gastrectomy result from the opening of this suture. The principal causes of dehiscence of the sutures, next to technical imperfections, are shortness or deep situation of the duodenal stump, inflammation of the duodenal wall and above all absence of the peritoneum which prevents the complete hermetic closing of the seroserous whip-stitch. The author prefers the technic of De Martel to that of Cuneo but criticizes the crushing of the duodenum. He considers the integrity of the duodenal wall the first requisite for a successful suture. He describes von Petz's perfection of Hültl's instrument for suture of the stomach and intestine. Its use simplifies and shortens the closing of the gastric and duodenal opening. It also guards against infection by contamination with the gastric or intestinal contents. The author questions whether the metal clamps are eliminated as quickly and completely as claimed and whether the lesions produced by them do not impair the vitality of the tissues. The instrument of Donati, while avoiding these drawbacks, increases the rapidity and precision of the duodenal closing. With this instrument the duodenum is gripped between two blades with blunt teeth, so that it is flattened out but not cut. By means of a long needle passed through a groove in the instrument, catgut is drawn through the entire section of the duodenum held in undulating folds by the teeth. A small compressor is applied to the duodenum on the pyloric side on a level with the blades of the instrument, and the duodenum is cut between the instrument and the compressor. The instrument is withdrawn and the ends of the catgut suture are knotted to ligate the intestinal end. A purse string suture of linen thread invaginates this ligated end, and three separate seromuscular sutures of linen thread consolidate this suture. In cases of indurated ulcer, conditions are not always favorable for application of the instrument. Only in exceptional cases is the duodenal end too short to use this instrument. Opening of the duodenum need not be feared; compresses restrict the leaking out of the contents of the isolated intestine; renewal of surgical material and gloves reduces the risk of contamination to a minimum.

Pediatria, Naples

40: 1029-1084 (Oct. 1) 1932

*Importance of Skin Reaction in Children of Tuberculous Parents in Diagnosis of Tuberculous Infection. A. Delaria.—p. 1029.
*Cholesteremia and Complementary Power of Serum in Diphtheritic and Scarlatinal Infections. E. Inglessi.—p. 1045.
Acromegaly with Evidences of Arachnodactylia in Boy Aged 11: Case. O. Pentagna.—p. 1061.
Acute Suppurative Epididymitis in Boy Aged 3: Case. J. Giovanni.—p. 1069.
Alimentary Regimen Without Milk for Nurslings. E. Zambrano.—p. 1073.

Skin Reaction in Children of Tuberculous Parents.—Delaria reviews the literature on the subject and maintains that children may have tuberculous infection without necessarily contracting the disease. After experimenting with subcutaneous tuberculin injections on cattle and men, he states that a positive skin reaction is evidence of tuberculous infection from birth to the age of 3 years. The disease may often occur during the third year. Children aged from 3 to 5, showing a positive reaction, definitely have tuberculosis; those aged from 5 to 7 are usually already infected with the disease. The author states in conclusion that it is important to make clinical observations of such latent infections and prevent their becoming active by therapeutic and hygienic measures.

Cholesteremia and Complementary Power of Serum in Scarlet Fever.—Inglessi determined the cholesterol content of the blood serum of sixty patients by the colorimetric method and found that the cholesterol content and the complementary power of the serum ran parallel in most cases of scarlet fever, diminishing constantly during the period of illness only to rise to normal and above normal during convalescence. In diphtheria, however, the parallelism was found in only 57.75 per cent of the patients. In 42.25 per cent of the patients there was no relation between the cholesteremia and the complementary power of the serum. In scarlet fever there was always a marked hypocholesteremia accompanied by a strong diminution of the complementary power. In postdiphtheritic paralysis the hypocholesteremia was not always notable, while the complementary power was constantly diminished.

Prensa Médica Argentina, Buenos Aires

19: 713-770 (Sept. 30) 1932

Hydatid Choleperitoneum. F. Dévé.—p. 713.
*Antitoxic Injection of Solution of Formaldehyde in Hydatid Cysts. F. Dévé.—p. 723.
Etiopathogenesis of Friedreich's Ataxia. M. R. Castex.—p. 734.
Diagram for Study of Human Biotype and Clinical Pictures of Arneth's Formula. G. Bosch, M. J. Barilari and I. Mogilevsky.—p. 744.
Ultrashort Hertzian Waves and Cellular Life. A. E. Roffo.—p. 751.

Hydatid Cysts.—Before discussing the recent modification of his method of treatment of hydatid cysts, Dévé reviews the original method. Its essential principle is the prevention of secondary echinococcosis by injection of a teniacidal solution before wide opening of the pocket. After evacuation of the cyst by puncture, a 2 per cent solution of formaldehyde is

injected. It is important that the quantity of formaldehyde solution injected is equal in volume to the contents of the cyst. The solution is allowed to remain in contact with the pocket five minutes. It may then be withdrawn; the cyst may be opened without danger of propagation and the intervention continued according to the method chosen. This procedure guards against the postoperative recurrences of hydatid cysts, which occur in 3 per cent of the interventions in which preliminary sterilization of the cyst is omitted. The author calls attention to the fact that his method is inapplicable to multivesicular cysts. The injection is incapable of producing toxic accidents except in cases of cysts of the lung, brain or spinal column, in which, as the author has previously pointed out, injection of formaldehyde solution is contraindicated. The author's recent modification of the method is aimed at the prevention of postoperative accidents of hydatid anaphylaxis, which are rare but sometimes fatal. It consists in the addition of potassium ferrocyanide solution to the solution of formaldehyde and acetic acid. The potassium ferrocyanide destroys the toxicity of the cyst by precipitating the proteins of the hydatid fluid. A solution of 2 Gm. of potassium ferrocyanide in 970 Gm. of water is sterilized ten minutes in the autoclave at 105 F. and cooled. Another solution, composed of 20 Gm. of commercial solution of formaldehyde and 10 Gm. of acetic acid, is made and the two solutions are mixed when needed. The author has used this liquid in two cases, in one of them in eight successive interventions. As desensitization by subcutaneous injection of hydatid fluid was also practiced, it is impossible to say whether it was the solution which prevented anaphylactic shock. Diffusion of an infinitesmal quantity of the hydatid fluid before injection of the antitoxic solution would vitiate the method. The author thinks that this antitoxic injection associated with preoperation desensitization will be a further safeguard against postoperative echinococcic anaphylactic shock.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

97: 465-801 (Sept. 20) 1932. Partial Index

Prison Psychosis in Female Prisoners. F. Knigge.—p. 533.
Atropine Treatment of Mental Disorders. P. Hoch and W. Mauss.—p. 546.
*Rare Forms of Migraine. P. Hoch.—p. 553.
Rare Case of Agnosia and Apraxia: Anatomic Observations. R. Golant-Ratner and J. Rosenblum.—p. 569.
*Problem of Traumatic Parkinsonism and Aspects of Extrapyramidal Motor Disturbances Following Cerebral Injuries. W. Heyde.—p. 600.
Combination of Centrally Caused Disorders of Labyrinthine and Recurrent Nerves. H. Brunner.—p. 644.
*Epilepsia Partialis Continua. G. Markovits.—p. 660.

Rare Forms of Migraine.—Hoch emphasizes that the term migraine should not be applied to headaches in general but should be reserved for a disease entity among the symptoms of which headache may play an important part but is nevertheless only a partial symptom and may even be entirely absent. He adheres to Curschmann's definition of migraine, and after discussing the significance of the differentiation between genuine and symptomatic migraine he points out that migraine is a disease that does not follow a fixed pattern but has a varied symptomatology. There are a number of typical symptoms that occur in all patients with migraine, and there are also rare forms of migraine, which are little known, and to some of these the author wishes to call attention. He gives detailed clinical histories of five cases. The first report concerns a boy, aged 11, in whom the first attack of migraine occurred when the child was only 6 months old. Since then the attacks have recurred every few weeks. The main symptom is severe vomiting, which generally persists from two to three days. In the intervals between the attacks the boy is almost entirely free from symptoms, except for a nervous dribbling of urine. He shows vasomotor hypersensitivity and is particularly sensitive to caloric stimulation. Another noteworthy aspect is that the boy has a tower head, for it is known that such persons are predisposed to migraine. The second clinical history concerns a boy, aged 14, in whom the first attack of migraine occurred at the age of 12. The main symptoms in this patient were headache, scintillating scotoma, tremor and weakness in the right arm, and paresthesias particularly in the right arm and in the tongue. In these first two patients, indications for an hereditary character of the migraine were not detectable; but this was the case in the other three patients. The third clinical report concerns a woman, aged 34. This case is of interest mainly because it shows relations to epilepsy. The fourth report gives the history of a man, aged 52. In this patient the migraine became complicated by diplopia, numbness in the right arm and a condition that the author considers as Quincke's edema of the brain. This form of edema is a symptom of a general vasomotor diathesis and it usually concurs with vasomotor trophic neuroses. The fifth case, that of a woman, aged 41, is reported because of unusual vestibular symptoms, particularly vertigo, also headaches, watering of the eyes, flimmer scotoma and nausea.

Problem of Traumatic Parkinsonism.—Heyde reports the clinical histories of twenty-eight patients. He asserts that in none of these cases were there signs that indicated a relationship between the disease and the trauma. Moreover, the statistical data of 1,500 accident cases do not give the least indication of a relationship between trauma and parkinsonism but rather speak against it, because in 683 cases of cranial and cerebral trauma there developed not a single case of parkinsonism. An indirect but extremely convincing argument for the correctness of the author's negative attitude toward the question of traumatic origin of paralysis agitans is the last group of patients with severe cerebral injuries reported by him. Among the complicated disease manifestations presented by these patients there were always extrapyramidal motor symptoms and also groups of symptoms that occur in paralysis agitans; but these symptoms never occurred alone or in the characteristic connections but concurred always with entirely different neurologic and psychic symptoms. Moreover, these cases never showed the progressive course of paralysis agitans but rather were stationary or regressive. Among the large number of patients with severe and permanent traumatic cerebral changes there were extremely few with extrapyramidal motor symptoms.

Epilepsia Partialis Continua.—This form of epilepsy was first described by Kojevnikoff, and Markovits designates it as Kojevnikoff's epilepsy. The case reported is noteworthy because certain classic symptoms of epilepsia partialis continua were entirely absent and for this reason the case must be considered as a special form of Kojevnikoff's epilepsy. Following the detailed case history the author discusses the differential diagnosis and then reviews what different authors have stated about the localization, the histopathology, the etiology and the treatment of the disease. In the reported case a ketogenic diet was instituted, but it proved ineffective. After that the author tried insufflation, which Benedek and Thurzó had recommended for extrapyramidal disorders. The insufflation was done by first withdrawing 35 cc. of cerebrospinal fluid and then introducing 25 cc. of air. The result of this intervention was favorable in that the persistent movements decreased considerably and the epileptic attacks ceased entirely.

Deutsche medizinische Wochenschrift, Berlin

58: 1511-1550 (Sept. 23) 1932

Rudolf Virchow and Conventions for Natural Sciences. G. Herxheimer.—p. 1511.
*Hyperalgesic Neurosis and Rheumatism. A. Géronne.—p. 1513.
Diet and Rheumatism. H. Determann.—p. 1515.
Development of Surgery on Nurslings. B. Heile.—p. 1516.
Cystic Kidney and Cyst of Kidney. O. Kleinschmidt.—p. 1518.
First Decade of Roentgen Diagnosis of Skull. A. Köhler.—p. 1519.
*Anatomy, Immunobiology and Therapy of Gonorrhea of Cervix. H. Felke and K. von Oettingen.—p. 1521.
*Disorders of Upper Air and Food Passages Following the Menopause. F. Blumenfeld.—p. 1523.
Subcortical Epilepsy. Gierlich.—p. 1524.
*Keratitis Filiformis as Partial Symptom of Incretory Disturbances. R. Wissmann.—p. 1525.
Skin and Irritating Plants. Touton.—p. 1527.
Examination of Air with Especial Consideration of Irritants Acting on Organism of Warm-Blooded Animals. W. Weichardt.—p. 1528.
Experimental Investigations on "Alteration" by Mineral Baths. K. Harpuder.—p. 1530.

Hyperalgesic Neurosis and Rheumatism.—Géronne calls attention to the difficulties in the differential diagnosis of rheumatic disorders. He thinks that not sufficient attention is given to the fact that a nervous constitution or neurasthenic conditions may cause painful myalgias and neuralgias. He states that he has observed many patients with hyperalgesic

neurosis who, under the diagnosis of muscular rheumatism or of rheumatic neuralgia, were subjected to various therapeutic measures without the neurosis being recognized. For this reason he shows how this form of "pseudorheumatism" can be recognized. Persons with hyperalgesic neurosis frequently show a hypersensitivity to cutaneous irritation; for instance, a pin prick is felt to be really painful, a warm bath is felt as extremely hot, pressure on the subcutaneous tissue, on the fat tissue or on certain groups of muscles causes great pain, and Valleix's points are much more sensitive than in normal persons. The painfulness of the great nerve trunks may resemble that of neuritis. However, only certain of these patients give the impression of hypersensitive neurotic persons, and to this the author ascribes the fact that in so many of these patients the neurosis is not recognized. Another misleading factor is that the complaints of these patients greatly resemble the so-called rheumatic symptoms. The pains may occur alternately in various muscle groups and may develop suddenly from complete well being and disappear again within a few days or may persist for longer periods. In other cases the pains develop in some nerve trunk; particularly frequent is the symptom of unilateral or bilateral sciatica, though the brachial plexus is also frequently involved. Another quite frequent symptom is the hypersensitivity of the scalp, which is usually accompanied by severe headaches. The author thinks that conditions such as adiposis dolorosa, panniculitis and fibrositis are likewise in many instances related to the hyperalgesic neurosis. In order that one may recognize the hyperalgesic neurosis he advises not only that the usual signs of neurasthenia, such as tremor, fluttering of the eyelids, strong reflexes and lability of the nervous system, be watched for but also that the pain susceptibility of the skin be tested with a needle and that of the musculature by pressure on certain muscles. He recommends psychotherapy as the most effective treatment.

Gonorrhea of Cervix.—After discussing the histologic and serologic aspects of gonorrhea of the cervix uteri, Felke and von Oettingen discuss the treatment. They consider temporary abstinence one of the main requirements of a successful treatment. On the basis of certain serologic observations they conclude that the treatment with living vaccines represents a noteworthy addition to the therapeutic armamentarium. They admit that it is not a universally curative method that can be employed in every gonorrheal patient, but they point out in what conditions it is indicated. They employ the living autovaccine in patients with gonorrhea of the cervix in whom the gonorrhea has existed for eight weeks or longer and in whom it is not complicated by disease of the adnexa. In gonorrhea complicated by an arthritis, the treatment with living autovaccine gives excellent results. Although the authors observed some cases of cervical gonorrhea with recent adnexitis in which treatment with living autovaccine effected a rapid cure, they are convinced that in at least 90 per cent of cases the gonococci disappear from the cervix only after the adnexa have come to rest. On the basis of their observations they conclude that the cervix is cured not so much by medicaments brought in contact with it as by certain immunity processes. The cervix requires a certain time for the development of a local immunity, but after this has been acquired the administration of the living vaccine exerts its full therapeutic action. Consequently, if an adnexitis exists, the authors advise the usual treatment, in which they consider rest, that is, sexual abstinence, as the most important factor. In addition to other measures, vaccination with commercial or fresh vaccines is helpful. After the blood sedimentation speed has become normal, although the cervix still contains gonococci, administration of living autovaccine is advisable. If the therapy is managed in this manner, local treatment of the cervix is almost superfluous.

Menopausal Disorders of Upper Air and Food Passages.—The conditions discussed by Blumenfeld are Moeller's glossitis, nervous coryza, asthma and apical ectopy of the lung. He points out that the occurrence of these conditions is not restricted to the menopausal age but that they are especially frequent at this period. Moreover, he thinks that the efficacy of ovarian therapy cannot always be taken as proof that the symptoms are the result of hormonal deficiency, for in the use of ovarian preparations the psychic factor is an important element. He realizes that it cannot always be determined whether the hormonal substitution plays a part or whether the action is mostly psychologic, but in his experience the treatment with ovarian preparations is the most effective in these conditions.

Keratitis Filiformis as Partial Symptom of Incretory Disturbances.—Wissmann defines as keratitis filiformis that peculiar disorder in which, as the result of hypofunction or of afunction of the tear sacs, manifestations of desiccation develop on the surface of the cornea. In reviewing the literature he found that in many publications this form of keratitis is classified with the inflammations of the conjunctiva; but he considers this erroneous, and his object is to determine the cause of the dysfunction of the tear sacs. He observed that nearly all the patients with this disorder were women, and the majority were over 40. Moreover, he noted that other glandular apparatus, such as the sweat glands and salivary glands, likewise showed disturbances that had the character of dysfunction. Cases are cited in which the dysfunction concurred with severe ovarian disorders, and the author reaches the conclusion that keratitis filiformis is not a disease of localized origin but rather a partial manifestation of a disturbance in a great system. He further points out that in some of these patients articular disorders are present and he is convinced that in at least two of his patients the articular disorders were of the character of endocrine periarthritis.

Klinische Wochenschrift, Berlin

11: 1657-1696 (Oct. 1) 1932

Pathogenesis of Pernicious Anemia. F. W. Bremer.—p. 1657.
Genesis of Certain Disturbances the Etiology of Which was Unknown So Far. K. von Neergaard.—p. 1661.
*Secretion of Bile Acids in Diseases of Liver. F. Rosenthal and K. Zinner.—p. 1664.
Increasing Action of Hypnotics by Analgesics. E. Hesse, E. Baumgart and Hertha Dickmann.—p. 1665.
Influence of Ultraviolet Radiation on Physiologic Action of Insulin. H. Küstner and W. Eissner.—p. 1668.
*Relations Between Anterior Lobe of Hypophysis, Thyroid and Carbohydrate Metabolism of Liver. H. Eitel and A. Loeser.—p. 1669.
Transitory Mental Disturbances in Diabetic Patient with Hypoglycemia: Forensic Significance. D. Adlersberg.—p. 1671.
New Esophagoscope for Use in Internal Clinic. N. Henning.—p. 1673.
Articular Rheumatism and Tuberculosis. A. Fischer and H. Hennes.—p. 1675.

Secretion of Bile Acids in Diseases of Liver.—Rosenthal and Zinner cite experimental and clinical observations, on the basis of which the bile acids are generally considered as the exclusive products of liver metabolism. Starting from the supposition of a close connection between liver function and formation of bile acids, they decided to determine the external secretion of bile acids in the duodenal bile during severe diffuse diseases of the liver. These tests are the continuation of former studies on the duodenal bile of persons without diseases of the liver. The object was to determine whether in diffuse lesions of the liver the secretion of bile acids decreases as considerably as is the case in the animal experiments with their brusque interventions on the healthy organ, or whether in hepatic disorders with slow course the mechanism of bile formation is largely preserved, even in the terminal stage of the disease, as the result of the peculiar capacity of the liver to compensate for the decreased function of the diseased parenchyma by hypertrophy and hyperplasia of the liver cells. In selecting their material the authors chose primarily patients with advanced diseases of the liver without severe disturbances of the bile secretion. Patients with icteric conditions were not selected, since it can be expected that the bile acids in the duodenal bile decrease with the bile secretion. Thus the material studied consisted primarily of terminal atrophic cirrhoses, which usually were combined with severe ascites. The reported analyses of bile acids and especially the bile acid numbers indicate that the mechanism of the formation of bile acids is largely preserved, even in the terminal stage of atrophic cirrhoses, whereas in hepatic disorders that concur with icterus the bile acid production is apparently reduced to minimal values. These observations on bile acid secretion show how little is as yet known about the relation between bile acid formation and the functional condition of the diseased parenchyma of the liver.

Hypophysis, Thyroid and Carbohydrate Metabolism of Liver.—Eitel and Loeser point out that studies on the relations between the hypophysis and the thyroid, which were carried on by a number of investigators, have proved that after administration of the substance of the anterior lobe of the hypophysis a condition resembling hyperthyroidism develops. Starting from these observations the authors wished to determine (1) whether administration of the anterior lobe of the hypophysis, just like that of thyroxine or of substance of the thyroid, is capable of reducing the glycogen content of the liver, and (2) whether this reduction is dependent on the cooperation of the thyroid. They found that intraperitoneal injection of thyrotropic substance of the anterior hypophysis produces in guinea-pigs morphologic and functional changes in the thyroid that resemble those of exophthalmic goiter in human subjects. These changes become noticeable two hours after the injection. The injection of the hypophyseal substance increases the thyroidal incretion. At first when the thyroidal changes set in the glycogen content of the liver remains constant, that is, hyperfunction of the thyroid and glycogen content of the liver do not go parallel; but the decrease in the glycogen develops after a latent period, which lasts about four days. The disappearance of glycogen that sets in after the latent period reaches the highest point on the seventh or on the eleventh injection day. Then the liver is entirely free from glycogen. The glycogen deficiency in the liver is a direct result of the hyperfunction of the thyroid, which in turn is produced by the anterior lobe of the hypophysis. The change in the thyroid and the concomitant decrease in the glycogen content of the liver are reversible. After the injection is discontinued, the glycogen content of the liver increases again and reaches the original value in about seven days. At the same time the signs of thyroidal hyperfunction disappear. The glycogen in the muscles shows only slight fluctuations in the course of the treatment. The action of the thyrotropic substance of the anterior hypophysis and the decrease in the glycogen content of the liver are dependent on the presence of thyroid, for in thyroidectomized animals this action is absent.

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56: 2401-2448 (Oct. 1) 1932

*Plica Falciformis Cervicolaquearis (Rudimentary Accessory Vagina). J. Halban.—p. 2401.
Decidua Nodule on Mucous Membrane of Uterine Cervix in Primigravida During Sixth Month of Pregnancy. H. Hinselmann.—p. 2406.
Hormone Content and Gynecologic Hormone Therapy. W. Wiegels.—p. 2409.
*Cerebral Hemorrhage in Eclampsia. H. Rheindorf.—p. 2413.
Delivery by Cesarean Section with Especial Consideration of Later Development of Children. G. Mohnhaupt.—p. 2416.
Spontaneous Rupture of Uterus. H. Hagelberg.—p. 2423.
Nipple of Nursing Bottle Resembling Breast. C. Fervers.—p. 2424.

Rudimentary Accessory Vagina.—Halban describes mucous membrane folds in the vagina, which he observed in several women. As the folds show a certain regularity of structure, they are not scars that developed after an injury or ulceration. As a rule the folds begin at the upper rim of the cervix, run archlike through the lateral vaginal vault, and for a distance go toward the vulva. Observations on a number of patients convinced the author that these folds are the rudiments of a vaginal septum and he points out that in the fusion of the two Müller's ducts into one tube there are frequently disturbances. If this union fails to take place in the vaginal portion, a septate vagina is the result, and if the septum reaches down into the introitus there is a double vagina. This abnormalty concurs occasionally, but not always, with a deficient fusion in the uterine and cervical portions. The author further states that microscopic examination revealed that the entire surface of the folds is covered with normal vaginal epithelium, and there is no sign of scar formation. In one instance he discovered at the base of the second rudimentary vagina numerous formations resembling the glands of the cervix uteri. The author thinks that the vaginal folds have a practical significance in that when they are present other developmental disturbances should be searched for.

Cerebral Hemorrhage in Eclampsia.—Rheindorf describes the clinical histories and the postmortem examinations of two women with eclampsia. In the first patient the subarachnoidal space and all ventricles were filled with blood. In the pons and in the adjoining portion of the left hemisphere of the cerebellum there was a hemorrhage the size of a hen's egg. By destroying the ependyma, the hemorrhage perforated into the fourth ventricle. The cerebral parenchyma of this region had become pulplike. Proximal to this region there were several hemorrhages, but otherwise the brain was free from hemorrhagic foci. In the second patient the inside surface of the skull in the region of both sulci of the middle meningeal artery and in the region of the frontal bone and of the posterior portion of the right parietal bone showed fine grayish red osteophytes. The sulci of the cerebrum were flat and the gyri were wide and swollen. A horizontal section revealed that the external portions of the left basal ganglions were destroyed. In the left lateral ventricle there was a large lump (almost fist size) of coagulated blood, and in the right lateral ventricle there was fluid blood. The fourth ventricle was free from hemorrhage. The author states that Novack estimates the incidence of extensive hemorrhages into the brain or its meninges as 10 per cent of all fatal eclampsias. About the etiology of these hemorrhages, opinions are still divided: some consider thrombus formation the main cause, others the sudden increase in blood pressure and still others the changes in the arterial walls. The author observed in the two reported cases, besides slight new formation of connective tissue in the muscularis of the arteries, also edema of the arterial walls. Consequently he thinks that these impairments of the vascular walls together with the increased blood pressure may be the causes of the cerebral hemorrhages.

Hospitalstidende, Copenhagen

75: 1011-1038 (Aug. 25) 1932

Nervous Child and Treatment. I. Ostenfeld.—p. 1011.
Case of Hepatic Coma in Cirrhosis, Treated with Dextrose and Insulin. T. Geill.—p. 1023.
Relation of Lysozyme in Xerophthalmia. O. Andersen.—p. 1029.

75: 1039-1066 (Sept. 1) 1932

*Congenital Pyloric Stenosis: Investigations on Variations in Chloride and Consequent Changes with Reference to Diagnosis and Therapy. E. Schnohr.—p. 1042.
*Phenobarbital Treatment of Chorea Minor. P. Drucker.—p. 1062.

Congenital Pyloric Stenosis.—In congenital pyloric stenosis, Schnohr found hypochloremia, azotemia and alkalosis, together with urine chloropenia; in two cases, tissue chloropenia was established in the kidneys, lungs and skin. As hypochloremia is usually more marked in this disorder than in other gastro-intestinal disturbances, a considerable hypochloremia, he says, may serve as a diagnostic adjuvant. The hypochloremia depends on the amount and frequency of vomiting, and even with intensive (hypertonic) sodium chloride therapy it may be impossible to restore normal chloride values. Gastric tetany in connection with pyloric stenosis is discussed.

Phenobarbital Treatment of Chorea Minor.—In fifteen cases of chorea minor in children aged from 8 to 13, Drucker gave 0.1 Gm. three times a day either for two weeks or until appearance of the exanthem about the tenth day, and then smaller doses, until a medicamental treatment of about two and a half months had been reached. A typical exanthem was seen in ten cases, usually with moderate rise of temperature. In about half the cases, clinical recovery occurred within two weeks. The treatment was well borne and phenobarbital is therefore preferred to nirvanol.

75: 1067-1094 (Sept. 8) 1932

*Investigations on Circulation of Blood in Blockage of Arteries and in Gangrene. J. Ipsen.—p. 1067.
Concerning Congenital Esophageal Atresia with Esophagotracheal Fistula Together with Remarks on Synchronism in Origin of Malformations. C'td. J. Ipsen, Jr., and H. Okkels.—p. 1083.

Circulation of Blood in Blockage of Arteries.—Ipsen discusses the value of oscillometry in establishing an arterial blockage and its seat, especially in the lower extremities, and of measurement of the temperature of the skin in determining the amount of blood circulating through the skin and consequently of the vitality of the tissues, with illustration by case reports.

CORRECTION

Primary Adenocarcinoma of Jejunum.—In the abstract of Palumbo's paper in THE JOURNAL, December 3, page 1985, in the title and all through the abstract the word jejunum should have been used instead of duodenum.